Operational Readiness

1.0 Introduction

Operational Readiness is the ability to respond to and manage on-water and marine-related needs. The Fleet Operational Plan (FOP) serves as the template for the Operations Normal Readiness Condition. When this capacity or preparedness is affected, the ROC will be directed to complete the Readiness Response Worksheet Template for Signature by the appropriate authority; the Signed Readiness Response Worksheet will then be distributed to NCC.

1.1Readiness Conditions

There are 5 Readiness Conditions as described below. It should be noted that a change in Readiness Condition could occur from lowest to highest without passing through the intermediate levels should circumstances warrant.

Operations Critical Radical Prority Adjustment Operations Heightened FOP and Additional Mission Operations Normal FOP Operations Restricted Mission Delay / Loss

Operations Reduced

Program Non-Delivery

Operations Critical (red): Fleet resources assume critical operational tempo, combination of events has to occur; Capability of human and physical resources to deliver on the FOP associated with a catastrophic event, resulting in a radical priority adjustment within the CCG. Operating costs will be increased significantly, Activation of spare resources as required will occur,

programs will be deferred and business resumption times will be significant. Serious impact on the environment, economic well-being of the country, safety and security or grave effect on national interest. An extremely rare occurrence.

1.1.2 Operations Heightened (green); Fleet resources assume a heightened operational tempo. In addition to FOP tasks, effort is expended to support an external demand. Operating costs will be increased slightly; fuel and other consumables may be increased. Normal operations might be deferred. Business resumption times will be minimal. Condition exists have a slight to moderate impact on the environment, the economic well-being of the country, or the safety and security of national interest. There is uncertainty about an external event's on delivery of the FOP. This type of occurrence happens on a regular basis.

- 1.1.3 Operations Normal (blue): This condition is the regular state of affairs, tempo is necessary to deliver FOP tasks. Adjustments are made routinely to deliver based on various stimuli. Normal is the optimum readiness posture and is composed of the sum of all the mission-ready human, vessel, aircraft, and operations centre resources of Fleet.
- 1.1.4 Operations Restricted (white); Fleet resources assume a restricted operational tempo due to a lack of resources or breakdown resulting in a loss or delay of FOP missions. Operating costs, use of fuel and other consumables will be increased; business resumption times will be minimal. This condition exists where an event occurs, normally internal to the CCG Fleet. Slight to moderate impact on the environment, the economic well-being, safety and security of the country and uncertainty about an event's effects on delivery of the FOP. This type of occurrence happens on a regular basis.
- 1.1.5 Operations Reduced (yellow); Fleet resources assume a reduced operational tempo, caused by an event or circumstances to remove critical resources from the Fleet. Delivery of Operating costs will be increased for the duration, business resumption times will be noticeable. Programs may be dropped or activation of spare resources or the reassignment of resources, including resources from other regions, may occur. Condition exists where series of events occur. Has impact on environment, economics, safety and security, or a serious effect on national interest. Beyond the scope of the FOP. This occurrence rarely happens.

1.3 Management Authority

The following matrix identifies those positions in the CCG hierarchy, either regionally or nationally, that would normally approve the change in Readiness Condition.

Authority Ma	trix for Readiness Condit	ion Profiles
Readiness Condition Profile	Regional	Inter-regional / National
Condition Red Ops Critical	Assistant Commissioner	Commissioner
Condition Green Ops Heightened	Regional Director, Fleet	Director General, Operations
Condition Blue Ops Normal	Superintendent, Regional Operations Centre (ROC)	
Condition White Ops Restricted	Superintendent, ROC	Superintendents, ROC – by consensus
Condition Yellow Ops Reduced	Regional Director, Fleet	Director, Operational

1.4 Readiness Response Worksheet

WESTERN REGION

Date: June 29th, 2018	
Current Readiness Profile: Ops Normal - Blue	***************************************
Proposed Readiness Profile: Ops Restricted - White	***************************************
Resource Status: All resources are operating as per the FOP with the exception of the	
following resources:	
Vessels:	
CCGS Bartlett. Asbestos wipe tests concluded that there is ACM contamination throughout the vessel. ACM remediation is underway. The vessel is expected to return to service on 27/07/2018	
Program Status: The following missions/programs contained in the FOP are currently affected:	***************************************
 The potential further delay to repairing damage done to the buoyage system in the Fraser River by this year's flooding. 	
Delay in the recertification and annual inspection to the Light house aerials & derrick	CS.
 Delays/added pressures to complete the MNS Buoy program as per the FOP for the remaining year. 	
Reason for Update in Profile: Western Region only has two vessels capable of conducting buoy tending operations CCGS Bartlett & CCGS Sir Wilfrid Laurier. CCGS Bartlett is near to the end of its operational life (4 year old), and has become prone to loss of operational program time due to various issues. CCGS Sir Wilfrid Laurier is scheduled to depart the region on July 3 rd 2018 for the western arctic. On its return to the region at the end of October it is scheduled to enter an estimated six month vessel life extension refit. After the CCGS Sir Wilfrid Laurier departs for the western arctic on July 3 rd 2018, the Canadian Coast Guard will not have the capability to lift or place floating aids to navigation the west coast of Canada until CCGS Bartlett returns to operational service on or about July 27 th , 2018.	on
Agreed: Regional Director, Fleet	

Signature

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Sheppard, Frederick

From: Sent: CCGS Bartlett - Chief Engineer January 4, 2016 10:02 AM

To:

*Dept Heads; CCGS Bartlett - MCR

Subject:

Emailing: 22603 Asbestos Survey Update V1.0 July 2014 - CCGS Bartlett

Attachments:

22603 Asbestos Survey Update V1.0 July 2014 - CCGS Bartlett.pdf

Re: Asbestos Survey

There is a hard copy of the Asbestos Survey in the CE's cabin (in bookshelf near washplace), but you may want to keep a shortcut on your desktops to the survey, in the event you want to be aware of potential asbestos hazards prior to performing a particular job.

I will also post a copy on O-Drive & P-drive.

And you likely all know, that only those people who have been trained in Asbestos Abatement, are considered to be qualified to work on asbestos (mostly bulkhead panels) without endangering themselves and/or the crew.

Ross McKenzie Chief Engineer, CCGS Bartlett

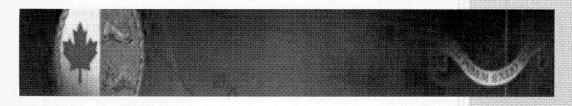
Cell:

Tellular:

Sat Phone: (

bartlett-chiefengineer@pac.dfo-mpo.gc.ca BartlettChief@gmail.com for files above 700 kb

Prepared for:



Canadian Coast Guard Ship CCGS Bartlett

Asbestos Risk Assessment



Prepared by:



#210-2950 Douglas Street Victoria B.C. V8T 4N4 Canada

Phone: 250-384-9695 Fax: 250-384-9865

Website: www.nwest.bc.ca
Email: northwest@nwest.bc.ca

August 2014

File: 22603 R1

CCGS Bartlett
Asbestos Risk Assessment Report

General Notes

The following is the latest Asbestos Risk Assessment for this vessel. North West Environmental Group (NWEG) conducted this risk assessment in June 2014. This assessment updates information contained in previous reports and NWEG's visual observations made on a room by room basis in May 2013 and June 2014.

Partial History of CCGS Bartlett and asbestos abatement:

The CCGS Bartlett underwent a Vessel Life Extension (Phase I and II) at Allied Shipyards between June 2009 and 2010.

According to this documentation, asbestos abatement during this Vessel Life Extension (VLE) included:

- · Removal of all deckhead support structure
- · Removals of asbestos containing insulation at the steam and domestic lines
- · Removal of asbestos containing mastic at all windows
- · Removal of asbestos containing paneling in the way of drop windows.
- Removal of floor covering in the Galley, Mess and Lounge
- Removal of deck steel plate from outboard bulk head to approximately 6' inboard in specified Upper Deck compartments.
- Tiles in alleyway to Radio Room and Bridge and N-03 (Radio Room)

NWEG was unable to verify the extent of the deck plate removal during the post VLE survey as all finishing's were re-fitted or covered before NWEG's visit.

Because the Canadian Coast Guard (CCG) continues with its asbestos removal and abatement program, there may have been some changes made after this report was printed.

In any case of uncertainty, all material must be considered 'asbestos containing' until it has been properly identified.

All concealed pipe insulation, textile wrap and fittings above suspended T-bar and beveline tiles must be assumed to contain asbestos.

Asbestos gaskets may be present around the perimeter of fire doors throughout the ship. The interior of fire doors are suspected to contain asbestos insulation unless otherwise stated. Older fire hoses (non-butyl or non-duroid canvas style) may be asbestos-containing.

Decks: Asbestos floor tiles may be present beneath carpeted areas. Asbestos containing floor tiles may also be concealed beneath new layers of sheet flooring. Deck screed and asbestos block insulation has been found in various locations beneath deck screed and other floor coverings. These materials must be sampled prior to disturbance.

All insulated penetrations including electrical, pipe, duct are assumed to contain asbestos unless otherwise stated.

All valve, flange and equipment gaskets are suspected to contain asbestos. Representative bulk samples should be collected of gasket materials before any work that may disturb the material is carried out.

NOTE 1 – An asbestos risk assessment by a qualified person must be completed prior to any removal and/or alteration work aboard the vessel. Removal and/or alteration work requires control measures to be implemented in accordance with WorkSafeBC and Labour Canada regulations and CCG specific requirements. Protective personal equipment is required during any work or major alteration that may disturb synthetic or asbestos insulation and/or dust that may be present.



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Safe work procedures must be implemented prior to exposing or disturbing any of these areas/materials.

Warning: in the event any additional suspect hazardous materials are encountered during renovation or demolition activities, work on those materials must stop immediately and remain undisturbed until testing confirms the presence or absence of asbestos or other hazardous material. If any material suspected of containing asbestos or another hazardous material is disturbed during the work, all work shall stop until the area is contained, the hazard evaluated by a qualified professional and the hazardous materials, if indeed present, is safely managed by a qualified contractor.



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Asbestos Risk Assessment

Deck 5 Whee	Wheelhouse Top		Wheelhouse Top	se Top		
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	n/a					
Bulkhead	n/a					
Lagging	None observed.					
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



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Inspection	uo					
Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	n/a					Account to the second s
Bulkhead	Styrofoam and Painted metal.					
Lagging	Man-made mineral fibre insulation (Fibreglass-type) and non-asbestos textile. Cementitious elbows and fittings may contain asbestos.				Maintain in an intact condition. Sample prior to disturbance	
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Whee	Wheelhouse Top				Funnel Casing	sing
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
	Painted metal.					
	Perforated metal over man- made mineral fibre insulation.					
The Control of the Co	Man-made mineral fibre insulation (Fibreglass-type) and non-asbestos textile. Cementitious elbows and fittings may contain asbestos. Navy board. High temperature jacketing and metal mesh over manmade mineral fibre insulation.				Maintain in an intact condition. Sample prior to disturbance	
	Checker plate metal catwalk.					



Asbestos Risk Assessment

Caulking and Penetrations present: may contain older asbestos containing materials below.	Possible asbestos sheet gasket material observed.	
//		

Asbestos Risk Assessment

Deck 4 Navig	Navigation Bridge Deck				Wheelhouse	Q
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Fwd: Wood panels. Aft (behind cabinet): asbestos containing marine panel Aft center line: non-asbestos marine panel Port & Stbd: Wood panels.	AIR	НСН	мерісм	Caulk all smaller cracks and joints with fire rated caulking.	
Lagging	Pipe lagging and red duct mastic above deckhead panels contains asbestos.					



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Maintain concealed deck screed if present in an intact condition. Sample screed prior to disturbance.	
ГОМ	
row	
G00D	
Carpet over sheet flooring and asbestos tile over asbestos containing deck screed.	Caulking and Penetrations present: may contain older asbestos containing materials below
Deck	Other



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Deck 4 Navi	Navigation Bridge Deck				CO2 Room (N07)	(NO7)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over mineral fibre board					
Bulkhead	Perforated metal over mineral fibre board					
Lagging	Man-made mineral fibre insulation (Fibreglass-type).					
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	New door (non-asbestos). Not a	. Not accessed 2014.	4			



Asbestos Risk Assessmer

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			C	
•				

Deck 4 Na	Navigation Bridge Deck				Stairway to Wheelhouse	heelhouse
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					D No
Bulkhead	Asbestos containing marine panels.	FAIR - GOOD	HIGH	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed.					
Deck	Sheet flooring, possibly over asbestos containing floor tiles or deck screed Note: no info on removal of AC tiles during VLE	0005	LOW	TOM	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					

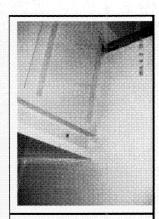


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Comments

2013: Some panels covered with metal sheeting. Metal flashing needs additional screw and caulking.
2014: Caulk observed on flashing. Ensure seal is maintained and repair as needed.





Deck 4 Navig	Navigation Bridge Deck				Library / Di	Library / Distress Signals
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	G005	НОН	MEDIUM	Maintain in an intact condition.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	New tiles possibly over asbestos containing floor tiles or deck screed Note: no info on removal of AC tiles during VLE	FAIR TO GOOD	HGH	row	Remove damaged tiles under moderate risk work procedures. Maintain in an intact condition.	
Other					488	
Comments						



Asbestos Risk Assessment

			-		
Alley to Communication Centre	Picture				
Alley to Comi	Recommendation		Maintain in an intact condition.		Maintain in an intact condition. Sample prior to disturbance.
	Friability		MEDIUM		MOT
	Accessibility	Company of the compan	НСН		NON TO THE RESERVE OF
	Condition		G00D		G000
Navigation Bridge Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Asbestos containing marine panels.	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	Epoxy flooring, possibly over asbestos containing floor tiles or deck screed
Deck 4 Navig	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



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Other	Caulking and Penetrations
	present: may contain older asbestos containing materials
	below.
Comments	



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(N-12)	Picture				
Washroom (N-12)	Recommendation		Maintain in an intact condition.		Maintain in an intact condition. Sample prior to disturbance.
	Friability		MEDIUM		TOW
	Accessibility		HIGH		МОТ
	Condition		G00D		GOOD
Navigation Bridge Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Asbestos containing marine panels.	Pipe lagging and red duct mastic above deckhead panels contain asbestos.	Epoxy possibly over asbestos containing floor tile and deck screed.
Deck 4 Navig	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



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Other present: may contain older asbestos containing materi below.	
Comments	
3	



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Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Foil-faced man-made mineral fibre insulation (Fibreglass-type).					
Bulkhead	New non-asbestos marine panels					
Lagging	Armaflex insulation on ducts. Red duct mastic contains asbestos.	FAIR	МЕДІЛМ	POW	Maintain in an intact condition.	
Deck	Epoxy possibly over asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below					



Asbestos Risk Assessment

Deck 4 Nav	Navigation Bridge Deck				Communic	Communication Centre Closet
Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man- made mineral fibre insulation.			The second secon		
Bulkhead	Outboard: Perforated metal over man-made mineral fibre insulation (Fibreglass-type). Rest: Painted metal.					
Lagging	None observed.					
Deck	Painted metal.					The state of the s



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Other	Caulking and Penetrations present: may contain older asbestos containing materials below.	
Comments		



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	Picture				9	
Spare (N-5)	Recommendation		Maintain in an intact condition. Sample prior to disturbance.		Maintain in an intact condition. Sample prior to disturbance.	
	Friability		MEDIUM			
	Accessibility		HGH			
	Condition		FAIR TO GOOD			
Navigation Bridge Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Asbestos containing marine panels.	Armaflex board insulation on ducts. Textile over man-made mineral fibre insulation (Fibreglass-type). Pipe lagging and red duct mastic above deckhead panels contains asbestos.	Carpet over asbestos tile and/or asbestos containing deck screed. Caulking and Penetrations	present: may contain older asbestos containing materials below.
Deck 4 Naviga	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck	Other



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Deck 3 Boat Deck	Deck				Chief Officer (B-8)	8)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Inboard: Asbestos containing marine panels. Rest: New none-asbestos marine panels under windows.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over asbestos tile and/or asbestos containing deck screed.	GOOD	ПОМ	нісн	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

Chief Officer (B-8)		
	Recommend installing flashing over seams between marine sheet panels	
Deck 3 Boat Deck	Comments	



Deck 3 Boat Deck	Deck				Chief Officer Washroom	ashroom
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.			Line 100 and 1		
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panel.	FAIR	HGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy coating over deck screed (screed may contain asbestos).	G005	ГОМ	HIGH	Maintain in an intact condition. Sample screed prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments			100 mm (100 mm) (100			



Asbestos Risk Assessment

Deck 3 Boat Deck	Deck				Chief Engineer (B-6)	neer (B-6)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Aft: Non-asbestos marine panel. Rest: Asbestos containing marine panel.	FAIR	нісн	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over asbestos tile and/or asbestos containing deck screed.	GOOD	FOM	НОН	Maintain in an intact condition. Sample prior to disturbance.	



Asbestos Risk Assessment

Other	Caulking and Penetrations present: may contain older asbestos containing materials below.
Comments	



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Insulation Insulation Condition Accessibility Friability Recommendation Picture	Deck 3 Boar	Boat Deck				Commanding	Commanding Officer (B-3)
New non-asbestos marine panels over foil-faced man-made mineral fibre insulation. Fwd and outboard: Non-asbestos	Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
FAIR HIGH MEDIUM marine panel Aft and inboard: Asbestos containing marine panels. By None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos. Carpet over asbestos tile and/or asbestos containing deck screed. Caulking and Penetrations present: may contain older asbestos containing materials below. Ments Not accessed June 2014.	Deckhead	New non-asbestos marine panels over foil-faced man-made mineral fibre insulation.					
ng None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos. Carpet over asbestos tile and/or asbestos containing deck screed. Caulking and Penetrations present: may contain older asbestos containing materials below. ments Not accessed June 2014.	Bulkhead	Fwd and outboard: Non-asbestos marine panel Aft and inboard: Asbestos containing marine panels.	FAIR	HOH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Carpet over asbestos tile and/or Good Low HIGH asbestos containing deck screed. Caulking and Penetrations present: may contain older asbestos containing materials below. Ments Not accessed June 2014.	Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
ments	Deck	Carpet over asbestos tile and/or asbestos containing deck screed.	0000	TOW	H 09 10	Maintain in an intact condition. Sample prior to disturbance.	
	Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
	Comments	Not accessed June 2014.					



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Deck 3 Boat Deck Inspection Zone Deckhead Pane Pane Rest mari Lagging Non Pipe



Deck 3 Boat Deck	Deck				Commandi (B01)	Commanding Officer's Washroom (B01)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deck	Epoxy over possible asbestos deck screed.	0005	ГОМ	нісн	Maintain in an intact condition. Sample screed prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	2013: Penetrations into bulkhead panels to be sealed. Not accessed June 2014.	panels to be	sealed.			





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Fan Room (B9) Inboard and Outboard:
Perforated metal over man-made mineral fibre insulation. Rest: Painted metal. **Boat Deck** Bulkhead Deck 3



Fan Room (B9)	e, n in n		
Fan Ro	Remove if possible, otherwise maintain in an intact condition.		
	LOW (textile)- HIGH (insulation)		
	MEDIUM		
	FAIR		
)eck	Asbestos pipe insulation present. Armaflex insulation on ducts. Man-made mineral fibre insulation (Fibreglass-type). Red duct mastic contains asbestos.	Painted metal.	Caulking and Penetrations present: may contain older asbestos containing materials
Deck 3 Boat Deck	Lagging	Deck	Other



Asbestos Risk Assessment

Deck 3 Boat Deck		Fan Room (B9)
Comments	2013: Possible original gaskets	



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Deck 3 Boat Deck	Jeck				Port Linen Locker	Locker
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Wood.					
Bulkhead	New non-asbestos marine panels.					
Lagging	None observed.					
Deck	Metal, possibly over asbestos containing floor tile and/or deck screed.	0005	NOT	МОЛ	Maintain in an intact condition. Sample screed prior to disturbance.	
Other						



Comments

Asbestos Risk Assessment

Deck 3 Boat	Boat Deck				Forward At	Forward Athwartship Alleyway
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panel. Non-asbestos marine panel.	FAIR	нен	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over asbestos tile and/or deck screed.	• • • • • • • • • • • • • • • • • • •	row	row	Maintain in an intact condition. Sample Prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Deck 3 Boat Deck	Deck			For	ward Stairwell (E	Forward Stairwell (Boat Deck to Poop Deck)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	0000				
Bulkhead	New non-asbestos marine panel.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over asbestos tile and/or deck screed. Stair treads.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Zone	Insulation Perforated metal over man- made mineral fibre insulation.	Condition	Accessibility	Friability	Recommendation	Picture Picture
	Fwd and outboard: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.					
	None observed.					
HISTORY CHARLES TO GO THE TO THE	Painted metal.					



Asbestos Risk Assessment

Other	Caulking and Penetrations present: may contain older asbestos containing materials below.		
Comments			

Asbestos Risk Assessment

Deck 3 Boat Deck	Deck				Emergency	Emergency Generator Room (B15)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man- made mineral fibre insulation. Painted metal.					
Bulkhead	Perforated metal over man- made mineral fibre insulation. Painted metal.					

Asbestos Risk Assessment

Emergency Generator Room (B15)	n Condition Accessibility Friability Recommendation Picture	waintain in an intact condition. Sample prior to disturbance. Supple prior	
eck	Insulation	Pipe runs: Man-made mineral fibre insulation (Fibreglass-type). Pipe elbows: Cementitious elbows and fittings may contain asbestos. High temperature jacketing and metal mesh over man-made mineral fibre insulation.	Painted metal.
Deck 3 Boat Deck	Inspection Zone	Lagging	Deck



Asbestos Risk Assessment

Deck 3 Boat Deck	Deck				Emergency	Emergency Generator Room (B15)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below. Acoustic phone booth may have an asbestos liner or insulation inside the casing.					
Comments						





Asbestos Risk Assessment

Deck 3 Boat Deck	Deck				Battery Room (B13)	om (B13)
Inspection Zone	Insulation	Condition	Condition Accessibility	Friability	Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

int (B14)	Picture	S CANDON CONTRACTOR OF THE PARTY OF THE PART	
SAR Equipment (B14)	Recommendation		
	Fríability		
	Accessibility		
	Condition		
Boat Deck	Insulation	Perforated metal over man-made mineral fibre insulation.	Aft and outboard: Perforated metal over man-made mineral fibre insulation. Fwd and inboard: Painted metal.
Deck 3 Boa	Inspection Zone	Deckhead	Bulkhead



Asbestos Risk Assessment

Deck 3 Boa	Boat Deck	SAR Equipment (B14)	
Lagging	Man-made mineral fibre insulation (Fibreglass-type). insulation on pipe runs. Cementitious elbows and fittings may contain asbestos. Red duct mastic contains asbestos.	Maintain in an intact condition. Sample prior to disturbance.	
Deck	Anti-skid coating.		
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.		
Comments			



Asbestos Risk Assessment

	ure				
vay	Picture				
Port Alleyway	Recommendation				Maintain in an intact condition. Sample prior to disturbance.
	Friability				
	Accessibility			27 (28)	
	Condition				
Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	New non-asbestos marine panels.	None observed.	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.
Deck 3 Boat Deck	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



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Asbestos Risk Assessment

Other	Caulking and Penetrations present: may contain older asbestos containing materials below.
Comments	



Asbestos Risk Assessment

Deck 3 Boat Deck	Deck				Exterior Insulati Superstructure)	Exterior Insulation (Port and Starboard Superstructure)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Painted metal.					
Bulkhead	Painted metal.					
Lagging	Metal over man-made mineral fibre insulation. 17oz Grey Canvas Jacketing over man-made mineral fibre insulation.				Maintain in an intact condition. Sample prior to disturbance.	
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

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•	Poop Deck				Second Of	Second Officer's Cabin (P3)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Fwd and outboard: Non-asbestos marine panel. Aft and inboard: Asbestos containing marine panels. Liner under window removed during VLE 2009-10.	FAIR	ндн	мерілм	Maintain in an intact condition. Sample prior to disturbance.	co
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Deck	Carpet over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Deck 2 Poop Deck	Deck				Third Office	Third Officer's Cabin (P-1)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels, except under window Liner under window removed during VLE 2009-10.	FAIR	нсн	мерісм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	ACCOUNTS OF THE PROPERTY OF TH				
Deck	Carpet over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Deck 2 Poop Deck	Deck				Washroom	
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	НОН	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy possibly over asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

de	0			
Starboard Alleyway to Outside	Picture			
Starboard A	Recommendation			
	Friability			
	Accessibility			
	Condition			
Poop Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	New non-asbestos marine panels.	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.
Deck 2 Poop	Inspection Zone	Deckhead	Bulkhead	Lagging



Asbestos Risk Assessment

Deck	Sheet flooring over possible asbestos containing deck screed. Caulking and Penetrations present: may contain older asbestos containing materials below.	Maintain in an intact condition. Sample prior to disturbance.	
Comments			



Asbestos Risk Assessment

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		1			
ew's Mess	Picture	100			
Alley to Crew's Mess	Recommendation		2013: Maintain in an intact condition. Sample prior to disturbance. 2014: Observed to be in good condition.		Maintain in an intact condition. Sample prior to disturbance.
	Friability		MEDIUM		
	Accessibility		HIGH		
	Condition		G00D		
Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Inboard: Asbestos containing marine panel. Rest: Non-asbestos marine panel.	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.
Deck 2 Poop Deck	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



Asbestos Risk Assessment

Deck 2 Poop Deck)eck				Alley to Crew's Mess	w's Mess
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Penetrations in old marine panels					



Asbestos Risk Assessment

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Deck 2 Poop	Poop Deck				Stationery Locker	Locker
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy possibly over asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						





Asbestos Risk Assessment

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Deck containing deck screed.	Caulking and Penetrations present: may contain older asbestos containing materia below.	Comments
Sotto	Caulking and Penetrations present: may contain older asbestos containing materials below.	
Maintain in an intact condition. Sample prior to disturbance.		

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Deck 2 Poop Deck	Deck				Port Dry St	Port Dry Stores Locker
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Metal panels over man-made mineral fibre insulation.					
Bulkhead	Metal panels over man-made mineral fibre insulation.					
Lagging	None observed.					
Deck	Epoxy possibly over asbestos containing floor tile and deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Crew's Mess (P13)	ity Friability Recommendation Picture				Maintain in an intact condition. Sample prior to disturbance.	
	Condition Accessibility					
Poop Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation. Liners removed during VLE 2009-10.	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	Epoxy possibly over asbestos containing deck screed.	Caulking and Penetrations present: may contain older asbestos containing materials below.
Deck 2 Poop	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck	Other



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Comments

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Asbestos Risk Assessment

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	Picture				
Galley (P16)	Recommendation		Mainfain in an intact condition		Mainfain in an intact condition. Sample prior to disturbance.
	Friability				
	Accessibility				
	Condition				
Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Metal panels over man-made mineral fibre insulation. Liners removed during VLE 2009-10.	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	Epoxy possibly over asbestos containing floor tile and deck screed.
Deck 2 Poop Deck	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



Asbestos Risk Assessment

Other	Caulking and Penetrations present: may contain older asbestos containing materials below.	
Comments		

Crew's Lounge and Canteen	Condition Accessibility Friability Recommendation Picture	arine I man- sulation.	arine I man- sulation. g VLE	duct ad panels	Maintain in an intact condition. Sample prior to disturbance.
Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation. Liners removed during VLE 2009-10.	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	Epoxy possibly over asbestos containing deck screed.
Deck 2 Poop Deck	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



Asbestos Risk Assessment

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Other	Caulking and Penetrations present: may contain older asbestos containing materials below.
Comments	



Asbestos Risk Assessment

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Deck 2 Poop Deck	Deck				Port Alley Out	Sut
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation. Liners removed during VLE 2009-10.					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					



Asbestos Risk Assessment

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Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos) asbestos)	Caulking and Penetrations present: may contain older asbestos containing materials below.	ents.
Deck	Other	Comments



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Deck 2 Poop Deck	Deck				Port Alley t	Port Alley to Crew's Lounge
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panel. Asbestos containing marine panel.	FAIR	НСН	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Deck 2 Poop Deck	Deck				Two Passengers (P12)	ngers (P12)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Non-asbestos marine panel. Asbestos containing marine panel. Liner under window removed during VLE 2009-10.	FAIR	HIGH	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over asbestos tile and/or asbestos containing deck screed.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.			1.4.25		
Comments	Not accessed 2014.					



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Asbestos Risk Assessment

(P10)	Picture			
Fan Room (P10)	Recommendation			Maintain in an intact condition. Sample prior to disturbance.
	Friability			НВН
	Accessibility			МЕДІЛІМ
	Condition			G00D
Deck	Insulation	Painted metal.	Painted metal.	Post refit: Man-made mineral fibre insulation (Fibreglass-type) on pipe runs. Cementitious elbows and fittings may contain asbestos.
Deck 2 Poop Deck	Inspection Zone	Deckhead	Bulkhead	Lagging



Asbestos Risk Assessment

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Asbestos Risk Assessment Report

Deck Painted metal.	Other Caulking and present: may asbestos cor below.	Comments
netal.	Caulking and Penetrations present: may contain older asbestos containing materials below.	

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Deck 2 Poop Deck	Deck				Supply Officer (P6)	cer (P6)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels, except under window Note: Liner under window removed during VLE 2009-10	FAIR	HGH	МЕРІИМ	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.				Maintain in an intact condition. Sample prior to disturbance.	



Asbestos Risk Assessment

Deck 2 Poop Deck	Deck				Supply Officer (P6)	icer (P6)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos)				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Not accessed 2014.					



Asbestos Risk Assessment

Deck 2 Poop	Poop Deck				Ship's Offic	Ship's Office Logistics (P2)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels, except under window Note: Liner under window removed during VLE 2009-10	FAIR	HGH	МЕDIUM	Maintain in an intact condition. Sample prior to disturbance.	38
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

Inspection Zone Insulation Condition Accessibility Friability Recommendation Picture Comments 2013: Penetrations in old Asbestos containing marine panels. 2014: Meeting in progress. Surveyed from door only.	Deck 2 Poop Deck	Deck				Ship's Offi	Ship's Office Logistics (P2)
	pection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
	mments	2013: Penetrations in old Asbest	os containing	marine panel	í		
			eyed from do	or only.			7



Deck 2 Poop	Poop Deck				Officer's Washroom (P4)	room (P4)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.				THE TABLE TO SERVICE T	
Bulkhead	Asbestos containing marine panels, except under window Note: Liner under window removed during VLE 2009-10	FAIR	нен	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy over possible asbestos containing floor tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	2013: Recommend that cracks be sealed	e sealed.				



Asbestos Risk Assessment

Athwartship Alleyway (5) by Stairs	Picture					
Athwartship	Recommendation		Maintain in an intact condition. Sample prior to disturbance.		Maintain in an intact condition. Sample prior to disturbance.	
	Friability		MEDIUM			
	Accessibility		ндн			
	Condition		FAIR			
Poop Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Fwd: New non-asbestos marine panels over foil-faced man-made mineral fibre insulation. Aft: Asbestos containing marine panels.	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	Sheet flooring over possible asbestos tile and/or asbestos containing deck screed.	
Deck 2 Poop	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck	



Asbestos Risk Assessment

Con to con Decry	Deck				Athwartshi	Athwartship Alleyway (5) by Stairs
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						

Asbestos Risk Assessment

Forward Stairs from Poop Deck to Upper Deck	Accessibility Friability Recommendation Picture				Maintain in an intact condition. Sample prior to disturbance.
Poop Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	None observed.	Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos).
Deck 2 Poop	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



Asbestos Risk Assessment

Deck 2 Poop Deck	Deck				Forward Sta Upper Deck	Forward Stairs from Poop Deck to Upper Deck
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Deck 2 Poop Deck	Deck				Aft Vent to Auxilia Exterior Gaskets	Aft Vent to Auxiliary Engine Room – Exterior Gaskets
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	N/A					
Bulkhead	N/A					
Lagging	N/A					
Deck	N/A					
Other						
Comments	Ductwork gaskets are to be handled as asbestos containing.	ed as asbes	tos containing			

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Asbestos Risk Assessment

Deck	Painted metal.
Other	
Comments	

Asbestos Risk Assessment

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neer (U17)	Picture				
Senior Engineer (U17)	Recommendation		Maintain in an intact condition. Sample prior to disturbance.		Maintain in an intact condition. Sample prior to disturbance.
	Friability		MEDIUM		
	Accessibility		НВН		
	Condition		Good-Fair		
Upper Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Asbestos containing marine panels.	Post refit: None observed.	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos).
Deck 1 Upper	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



Asbestos Risk Assessment

Caulking and Penetrations present: may contain older asbestos containing materials below.	2013: Seal seams of asbestos marine panels.	
Other	Comments	

Asbestos Risk Assessment

(6,					
Senior Engineer's Washroom (U-19)	Picture				
Senior Eng	Recommendation				Maintain in an intact condition. Sample prior to disturbance.
	Friability				
	Accessibility				
	Condition				
Upper Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Asbestos containing marine panel.	None observed.	Epoxy over possible asbestos containing floor tile and/or deck screed (screed may contain asbestos).
Deck 1 Uppe	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



Asbestos Risk Assessment

ther	Comments



Asbestos Risk Assessment

Deck 1 Uppe	Upper Deck				Aft Crew's	Aft Crew's Washroom and Closet
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New marine panels may be over man-made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	НСН	МЕDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Textile over man-made mineral fibre insulation (Fibreglass-type).				Maintain in an intact condition. Sample prior to disturbance.	
Deck	Epoxy over possible asbestos containing floor tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	



Asbestos Risk Assessment

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Deck 1 Upper Deck	Deck				Second En	Second Engineer (U23)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panels.	FAIR	HIGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck Painted metal plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

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Comments

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2013: Some penetrations in old marine panels.



Deck 1 Upper Deck	Deck				Washroom (U21)	(U21)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	нСн	мерісм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed.					
Deck	Epoxy over possible asbestos containing floor tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Deck 1 Upper	Upper Deck				Third Engineer (U27)	neer (U27)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panels.	FAIR	HIGH	МЕДІЛМ	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

Deck 1 Upper Deck	. Deck				Third Engineer (U27)	neer (U27)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Comments	2013: Some penetrations in old Not accessed 2014.	in old marine panels.		The control of the co	ACTION AND ACTION ACTION AND ACTION AND ACTION AND ACTION AND ACTION AND ACTION AND ACTION ACTION AND ACTION ACTION AND ACTION ACTION AND ACTION ACTIO	



Deck 1 Upper Deck	Deck				Two Oilers (U29)	(029)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panels.	FAIR	ндн	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

Deck 1 Upper Deck	r Deck				Two Oilers (U29)	(U29)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Comments	2013: Some penetrations in old r Not accessed 2014.	in old marine panels.				

Asbestos Risk Assessment

Deck 1 Upper Deck	. Deck				Two Passe	Two Passengers (U31)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panels.	FAIR	нон	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

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Deck 1 Uppe	Upper Deck				Cook and S	Cook and Steward (U33)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels. New non-asbestos marine panels.	FAIR	HGH	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent			Annual Indiana	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Note-also known as seaman cabin	ü				



Asbestos Risk Assessment

Deck 1 Uppe	Upper Deck				Chief Cook (U35)	(135)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Asbestos containing marine panels.	FAIR	HGH	MEDIUM	Maintain in an intact condition. Sample prior to disturbance	
	New non-asbestos marine panels.					
Lagging	None observed.	FAIR	MEDIUM	row	Remove if nossible	
	Pipe lagging and red duct mastic above deckhead panels contains asbestos.			(textile)- HIGH (insulation)	otherwise maintain in an intact condition.	
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos).				Maintain in an intact condition. Samplie prior to disturbance.	
	VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.		24 10 10 10 10 10 10 10 10 10 10 10 10 10			
Comments	2013: Penetrations in old marine Not accessed 2014.	marine panels. No	I I No Access – Resident Sleeping	l sident Slee	l ping	



Asbestos Risk Assessment

	Picture			
oom (U39)			30	3
Laundry Room (U39)	Recommendation		Maintain in an intact condition. Sample prior to disturbance.	Maintain in an intact condition.
	Friability		MEDIUM	HIGH
	Accessibility		НОН	HIGH
	Condition		FAIR	FAIR
Upper Deck	Insulation	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	Fwd and Outboard: New non-asbestos marine panels. Rest: Painted metal.	Asbestos containing pipe insulation. Navy board insulation on ducts.
Deck 1 Uppe	Inspection Zone	Deckhead	Bulkhead	Lagging



Asbestos Risk Assessment

Deck Epoxy over possible deck screed may contain asbestos). Other Caulking and Penetrations present: may contain older asbestos containing materials below.

Asbestos Risk Assessment

Deck 1 Upper Deck	· Deck				Steering G	Steering Gear Compartment
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man- made mineral fibre insulation.					
Bulkhead	Perforated metal over man- made mineral fibre insulation.					



Asbestos Risk Assessment

Steering Gear Compartment	on Picture	120			
Steering	Recommendation	Maintain in an intact condition.			
	Friability	меріпм			
	Accessibility	MEDIUM			
	Condition	G000		100 (100 (100 (100 (100 (100 (100 (100	
. Deck	Insulation	Armaflex insulation. High temperature jacketing and metal mesh over man-made mineral fibre insulation.	Painted metal.	Caulking and Penetrations present: may contain older asbestos containing materials below.	
Deck 1 Upper Deck	Inspection Zone	Lagging	Deck	Other	Comments



Deck 1 Upper Deck	. Deck				Loan Cloth	Loan Clothing / Stores
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man- made mineral fibre insulation.					
Bulkhead	Outboard: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.					
Lagging	Armaflex insulation.					
Deck	Painted deck screed over asbestos block insulation.				Maintain in an intact condition.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	2013: Deck sample taken. Februa	ıry 2012. Dur	ing refit, a lay	er of asbest	os block insulation v	. February 2012. During refit, a layer of asbestos block insulation was found below deck screed



Asbestos Risk Assessment

Deck 1 Upper Deck	Deck				Cold Storage	le
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels.					
Bulkhead	Marine panels. Liners removed during VLE 2009-10.					
Lagging	Armaflex insulation.					
Deck	Painted metal.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.	A				
Comments					4°2.	



Asbestos Risk Assessment

Deck 1 Upper Deck	Deck				Cool Storage	Je
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels.					
Bulkhead	New non-asbestos marine panels.					
Lagging	Armaflex insulation.					
Deck	Painted metal.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Deck 1 Upper Deck	Deck				Alley (6) between La Emergency Steering	Alley (6) between Laundry Room and Emergency Steering
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels.	FAIR	НСН	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed.					
	Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over possible asbestos tile and/or deck screed(screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Deck 1 Upper Deck	. Deck				Two Seamen (U38)	ın (U38)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	G000				
Bulkhead	Inboard: Asbestos containing marine panels. Rest: New non-asbestos marine panels.	FAIR	HIGH	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	Post refit: None observed.				of the State	e ken ku
Deck	Carpet over possible asbestos tile and/or deck screed over asbestos block insulation.	G00D	ГОМ	ГОМ	Maintain in an intact condition.Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

Deck 1 Upper Deck	r Deck				Two Seamen (U38)	en (U38)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Comments	2013: Some penetrations in bulkhead part Not accessed 2014 but viewed from door.	in bulkhead partially plugged. ewed from door.	plugged.			Ţ.
						2



Asbestos Risk Assessment

Deck 1 Upper Deck	. Deck				EngineRoom Escape	m Escape
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Painted metal.					
Bulkhead	Painted metal.					
Lagging	None observed.					
Deck	N/A					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Asbestos Risk Assessment

Deck 1 Upper	Upper Deck				Forward Cr	Forward Crew's Washroom (U-20)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HGH	мерілм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy over possible deck screed (screed may contain asbestos).				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Not accessed 2014.					



Asbestos Risk Assessment

Deck 1 Upper	Upper Deck				Linen Lock	Linen Locker by U26 and U30
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels.					
Bulkhead	Asbestos containing marine panel.	FAIR	НВН	мерісм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Painted metal over possible deck screed (screed may contain asbestos).	G00D	ГОМ	TOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Deck 1 Upper Deck	Deck				Two Seamen (U36)	n (U36)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					West states out
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	POOR TO FAIR	НСН	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent	G000	row	NON	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

Deck 1 Upper Deck	r Deck				Two Seamen (U36)	ın (U36)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Comments	2013: Penetrations in old marine	larine panels.				
	Not accessed 2014.					1
						•



Deck 1 Upper Deck	Deck				Two Passe	Two Passengers (U32)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					OSCI MATAMENSTA O.A.
Bulkhead	Rest: New non-asbestos marine panels. Inboard: Asbestos containing marine panel.	FAIR	нсн	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent	GOOD	МОЛ	TOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Not accessed 2014.					





Deck 1 Upper	Upper Deck				Two Seamen (U30)	ın (U30)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Rest: New non-asbestos marine panels. Inboard: Asbestos containing marine panel.	FAIR	НВН	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent	G00D	row	TOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

Deck 1 Upper Deck	r Deck				Two Seamen (U30)	en (U30)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Comments	2013: Penetrations in old marine	arine panels by TV.				
	Not accessed 2014.					



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Deck 1 Upper	Upper Deck				Two Passe Seaman	Two Passengers (U26)/Leading Seaman
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	Rest: New non-asbestos marine panels. Inboard: Asbestos containing marine panel.	FAIR	нон	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos). VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent	1 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1			Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					



Asbestos Risk Assessment

Deck 1 Upper Deck	r Deck				Two Seamen (U30)	an (U30)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Comments	2013: Some partially plugged penetrations in patch.	netrations in p	oatch.			
	Not accessed 2014.					





Asbestos Risk Assessment

Deck 1 Upper Deck	r Deck				Two Leadin	Two Leading Seaman (U-22)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Comments	2013: Metal flashing is loose. Some penetrations in old marine panels.	ne penetratic	ons in old mari	ne panels.		
	Not accessed 2014.					



Deck 1 Upper Deck	Deck				Sick Bay (U16)	16)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation. Liners removed during VLE 2009-2010					
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Epoxy over asbestos block. VLE 2009-2010: Removal of deck steel plate from outboard bulk head to approximately 6' inboard. Unable to verify extent					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



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Deck 1 Upper Deck	Deck				Linen Locker by U34	er by U34
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels.	GOOD				
Bulkhead	Asbestos contaíning marine panel.	FAIR	HOH	MEDIUM	Repair damaged marine panels with sheet metal flashing or equivalent. Caulk all smaller cracks and joints with fire rated caulking.	
Lagging	None observed.					
Deck	Deck screed.	0000	ГОМ	row	Maintain in an intact condition.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					223
Comments						



122

Deck 1 Upper Deck	Deck				Starboard Alleyway	4 <i>lleyway</i>
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels. Asbestos contaíning marine panels.	FAIR	НОН	MEDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.	######################################				
Deck	Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block insulation.	G00D	ГОМ	TOW	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



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Deck 1 Upper	Upper Deck				Aft Alley be Alleyways	Aft Alley between Stbd and Port Alleyways
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels. Asbestos contaíning marine panels.	FAIR	нісн	МЕDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over possible asbestos tile and/or deck screed way contain asbestos) and thermobestos block insulation.	GOOD	LOW	row	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



000134

Deck 1 Upper Deck) Jeck				Port Alleyway	ау
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.			25 July 1974 1974 - 1974 1974 - 1974		
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HIGH	МЕDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Sheet flooring over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block insulation.	G00D	ГОМ	ГОМ	Maintain in an intact condition. Sample prior to distrubance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.			54 (3)		
Comments						





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Other	Caulking and Penetrations present: may contain older asbestos containing materials below.
Comments	



Deck 1 Upper Deck	Deck				Winchman (U14)	(U14)
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.					
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	нон	меріпм	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block.	GOOD	row	row	Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.		14 min			
Comments	Formerly Senior Bosun.		7			



Deck 1 Upper Deck	. Deck				Bosun (U15)	1
Inspection Zone	Insulation	Condition	Accessibility	Friabillity	Recommendation	Picture
Deckhead	New non-asbestos marine panels over foil-faced man- made mineral fibre insulation.	GOOD				
Bulkhead	New non-asbestos marine panels. Asbestos containing marine panels.	FAIR	HOH	МЕDIUM	Maintain in an intact condition. Sample prior to disturbance.	
Lagging	None observed. Pipe lagging and red duct mastic above deckhead panels contains asbestos.					
Deck	Carpet over possible asbestos tile and/or deck screed (screed may contain asbestos) and thermobestos block.				Maintain in an intact condition. Sample prior to disturbance.	
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Formerly Chief Cook					



Asbestos Risk Assessment

		0 13			
tores	Picture				
Bosun's Stores	Recommendation				
	Friability				
	Accessibility				
	Condition				
Upper Deck	Insulation	Perforated metal over man- made mineral fibre insulation.	Perforated metal over man- made mineral fibre insulation. Painted metal.	None observed.	Painted metal.
Deck 1 Upper	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck



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Other Caulking present: asbestos below.	Caulking and Penetrations present: may contain older asbestos containing materials below.			
Comments				



Asbestos Risk Assessment

	Picture			
Room	Pic			
SCR Drive Room	Recommendation			
	Friability			
	Accessibility			
	Condition			
Upper Deck	Insulation	Perforated metal over man- made mineral fibre insulation.	15" Return: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.	Possible parged pipe elbows exist which may contain asbestos.
Deck 1 Upper	Inspection Zone	Deckhead	Bulkhead	Lagging



Asbestos Risk Assessment

Deck Painted metal. Caulking and Penetrations Other Caulking and Penetrations	below.
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Asbestos Risk Assessment

Fire Equipment Compartment	Picture			
Fire Equipm	Recommendation			
	Friability			
	Accessibility			
	Condition	AND THE STATE OF T		
Upper Deck	Insulation	Perforated metal over man- made mineral fibre insulation.	Outboard, by way of generator and 15" Return: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.	Possible parged pipe elbows exist which may contain asbestos.
Deck 1 Upper	Inspection Zone	Deckhead	Bulkhead	Lagging



Asbestos Risk Assessment

Deck	Other	Comments
Anti-skid paint on metal.	Caulking and Penetrations present: may contain older asbestos containing materials below.	
		A TOTAL AND THE STATE OF THE ST



Deck 1 Upper Deck	Inspection Insulation Zone	Deckhead Perforated metal over manmade mineral fibre insulation.	Bulkhead Painted metal.	Lagging None observed.	Deck Painted metal.
	Condition	THE CONTROL OF THE CO			
	Accessibility				
	Friability				
Paint Locker	Recommendation				
97	Picture				



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Comments	Other	Caulking and Penetrations present: may contain older asbestos containing materials below.		
	Comments			





u	Picture					
Engine Room	Recommendation			Remove if possible, otherwise maintain in an intact condition.		
	Friability			LOW (textile)- HIGH (insulation)		
	Accessibility			меріпм		
	Condition			FAIR		
line	Insulation	15" Return and a 10'x4' area: Perforated metal over man- made mineral fibre insulation. Rest: Painted metal.	Aft: Painted metal. Rest: Perforated metal over man-made mineral fibre insulation.	Asbestos containing pipe insulation. Non-asbestos pipe insulation. High temperature jacketing and metal mesh over man-made mineral fibre insulation. Navy board over man-made mineral fibre insulation.	Checker plate metal catwalk.	Caulking and Penetrations present: may contain older asbestos containing materials below.
Deck 0 Baseline	Inspection Zone	Deckhead	Bulkhead	Lagging	Deck	Other



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Comments

Maintain asbestos containing lagging in good condition.



Asbestos Risk Assessment

Deck 0 Baseline	line				Auxiliary A	Auxiliary Machine Room
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man- made mineral fibre insulation. Painted metal.					
Bulkhead	Painted metal.					
Lagging	Asbestos containing pipe insulation. Non-asbestos pipe insulation. High temperature jacketing and metal mesh over man-made mineral fibre insulation. Navy board over man-made mineral fibre insulation.	FAIR	MEDIUM	LOW (fextile)- HIGH (insulation)	Remove if possible, otherwise maintain in an intact condition.	
Deck	Checker plate metal catwalk.					



Asbestos Risk Assessment

Deck 0 Baseline	eui				Auxiliary M	Auxiliary Machine Room
Inspection Zone	Insulation	Condition	Accessibility	Friability	Condition Accessibility Friability Recommendation	Picture
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments	Maintain asbestos containing lagging in good condition.	ging in good	condition.			



eline MCR Stores	Insulation Condition Accessibility Friability Recommendation Picture	Perforated metal over man- made mineral fibre insulation.	Fwd and Outboard: Perforated metal over man-made mineral fibre insulation. Rest: Painted metal.	None observed.	Painted metal.	Caulking and Penetrations present: may contain older asbestos containing materials below.	
Deck 0 Baseline	Inspection Zone	Deckhead Perforated made min	Bulkhead Fwd and C metal over fibre insults in the second insults insults insults insults insults insults insu	Lagging None obse	Deck Painted m	Other Caulking a present: masbestos de below.	Comments



Asbestos Risk Assessment

Deck 0 Baseline	ne				Electrician'	Electrician's Workshop
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man- made mineral fibre insulation. Painted metal.					Showing location of pipe insulation removed by glove bag.
Bulkhead	Painted metal.					
Lagging	New non-asbestos pipe insulation. Asbestos containing pipe insulation removed by LGF Environmental on May 31, 2012					
Deck	Checker plate metal. Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Deck 0 Baseline	ne				Control Room	ш
Inspection Zone	Insulation	Condition	Accessibility	Friability	Recommendation	Picture
Deckhead	Perforated metal over man- made mineral fibre insulation.					
Bulkhead	Perforated metal over man- made mineral fibre insulation.					
Lagging	New non-asbestos pipe insulation. Navy board over man-made mineral fibre insulation. Asbestos containing pipe insulation removed by LGF Environmental on May 31, 2012					Showing location of pipe insulation removed by glove bag.
Deck	Painted metal.					
Other	Caulking and Penetrations present: may contain older asbestos containing materials below.					
Comments						



Appendix 1 Evaluation of Asbestos Containing Materials (ACM)

Evaluation of asbestos containing materials is based on the condition of the material and its accessibility. Following are the guidelines used to evaluate ACMs and the action, if any, required to safely manage them.

Spray Applied Fireproofing, Insulation and Texture Finishes

In evaluating the condition of ACM spray applied as fireproofing, thermal insulation or texture, decorative or acoustic finishes, the following criteria apply;

GOOD	Surface of material shows no significant signs of damage, deterioration or delamination. Up to one percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the surveyor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.
POOR	Sprayed materials show signs of damage, delamination or deterioration. More than one percent damage to surface of ACM spray.

Mechanical Insulation

In evaluating the condition of mechanical insulation (on boilers, breeching, ductwork, piping, tanks, equipment etc.) the following criteria are used:

COOD	Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.
FAIR	Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.
POOR	Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

Non-Friable and Potentially Friable Materials

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos Concrete products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material will be treated as a friable product.



CCGS Bartlett
Risk Assessment Report

Accessibility

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

Access (A)	Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may results in disturbance of ACM not normally within reach from floor level.
Access (B)	Frequently entered maintenance areas within reach of maintenance staff, without need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.
Access (C) Exposed	Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.
Access (C) Concealed	Areas of the building which require removal of a building component including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces etc. Observations are limited to the extent visible from the access points.
Access (D)	Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition or the ceiling, wall or equipment etc., is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor's ability to visually examine the materials in Access D.



Asbestos Risk Assessment

CCGS Bartlett
Risk Assessment Report

Appendix 2 Bulk Sample Analysis Results



CCGS Bartlett
Risk Assessment Report

End of report. This page intentionally left blank.



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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: XPAC CCG Bartlett ChiefEngineer < Bartlett-ChiefEngineer@pac.dfo-mpo.gc.ca>

Sent: January 22, 2016 3:30 PM **To:** CCGS Bartlett - Chief Officer

CCS Bartlett - Commanding Officer; Gress Connie; CCGS Bartlett - SeniorEngineer;

CCGS Bartlett - MCR

Subject: RE: White Crew 2016 Record of Asbestos Training.doc

Thanks for the list Kevin.

I think we should keep it in mind whenever we can manage to fit in a full day alongside VCGB with not much else to do. The Awareness Training can be done in half a day, one in AM and one in PM to get both watches trained. I expect that North West Environmental can put on a training session with very little notice if required. And I expect that the training is cheap (I probably have a record of the cost in an email on file).

I've cc'd Connie so that she's aware of the deficiency, and that all employees working in an environment with ACMs (Asbestos Containing Materials), should at least be aware of the dangers.

Please note that I have an Asbestos Awareness booklet, if you want to pass it around and make it mandatory reading – and/or have someone scan it to P-Drive for inclusion in Famming folder.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell: :
Tellular:

Sat Phone: bartlett-chiefengineer@pac.dfo-mpo.gc.ca

<u>BartlettChief@gmail.com</u> for files above 700 kb

From: CCGS Bartlett - Chief Officer Sent: 22 January 2016 14:45 To: CCGS Bartlett - Chief Engineer

Subject: White Crew 2016 Record of Asbestos Training.doc

s.16(2)

s.21(1)(b)

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS Bartlett - Chief Officer

Sent:

October 31, 2016 8:54 AM

To:

CCGS Bartlett - Commanding Officer

Subject:

Comments in Ch/O handover notes red to white

Ryan Gurr

Chief Officer, CCGS Bartlett Canadian Coast Guard

BartlettCHO@bar.ccgs-ngcc.gc.ca

Chief Officer Cell:

Ship's Cell:

Victoria Base Landline: 250 480 2692

Iridium Satellite:

Document Released Under the Access to Informatios 16(2) / Document divulgué en vertu de la Loi sur l'accès à l'information.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS Bartlett - Chief Engineer

Sent:

May 18, 2017 7:07 PM

To:

CCGS Bartlett - SeniorEngineer; CCGS Bartlett - MCR

Cc:

CCGS Bartlett - Commanding Officer; CCGS Bartlett - Chief Officer; CCGS Bartlett

Subject:

FW: Bartlett Bid con questions

Attachments:

F1782-17C810 Bartlett Bid Conference - Minutes.docx; F1782-17C810 CCGS Bartlett

Spec May2017 Alongside refit.DOCX

FYI

New emails just rec'd. Official & latest copy of Refit PWGSC Spec attached.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

Ceil:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

+

Governmen of Canada Gouvernemer du Canada Canadä

From: Camilleri, Edward [mailto:Edward.Camilleri@dfo-mpo.gc.ca]

Sent: 15 May 2017 12:54

To: CCGS Bartlett - Chief Engineer **Subject:** FW: Bartlett Bid con questions

Matt,

Attached is apparently the latest spec. The changes noted in the bid con minutes are not in the spec but are straightforward. I have stapled those minutes as page 2 in my printed copy of the spec.

Regards,

Edward Camilleri CCG Marine Engineering | GCC Ingénierie navale 250 363 6490

From: David Castle [mailto:David.Castle@pwgsc-tpsgc.gc.ca]

Sent: 2017-May-15 12:23 PM

To: Camilleri, Edward

Subject: FW: Bartlett Bid con questions

Hi Edward, it was the minutes that I was thinking about. I have also attached the latest version of the spec – the changes noted in the bid con minutes have been changed in the spec but we should confirm that Mark is aware.

See you Wed at 0800.

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Regards, Dave

Dave Castle

Supply Specialist | Acquisitions, Marine

Public Services and Procurement Canada | Government of Canada

<u>David Castle@pwgsc-tpsgc.gc.ca</u> Tel :250-217-6555| Fax : 250-363-3960

Spécialiste d'approvisionnement | Approvisionnements, marine Services publics et Approvisionnement Canada / Gouvernement du Canada David.Castle@pwgsc-tpsgc.gc.ca Tel: 250-217-6555| Fax: 250-363-3960

Serving Government, Serving Canadians | Au service du gouvernement, au service des Canadiens

From: David Castle

Sent: April-20-17 10:38 AM

To: 'Wright, Edward' < Edward.Wright@DFO-MPO.GC.CA

Cc: Camilleri, Edward < Edward.Camilleri@dfo-mpo.gc.ca>; BartlettCE@bar.ccgs-ngcc.gc.ca

Subject: RE: Bartlett Bid con questions

Hi Ed, here is a copy of the Bid Conf. minutes I sent out today.

Any questions please let me know.

Regards,

Dave Castle

Supply Specialist | Acquisitions, Marine

Public Services and Procurement Canada | Government of Canada

David.Castle@pwgsc-tpsgc.gc.ca Tel: 250-217-6555| Fax: 250-363-3960

Spécialiste d'approvisionnement | Approvisionnements, marine Services publics et Approvisionnement Canada / Gouvernement du Canada

David.Castle@pwgsc-tpsgc.gc.ca Tel: 250-217-6555| Fax: 250-363-3960

Serving Government, Serving Canadians | Au service du gouvernement, au service des Canadiens

From: Wright, Edward [mailto:Edward.Wright@DFO-MPO.GC.CA]

Sent: April-19-17 2:21 PM

To: David Castle < David.Castle@pwgsc-tpsgc.gc.ca >

Cc: Camilleri, Edward <Edward.Camilleri@dfo-mpo.gc.ca>; BartlettCE@bar.ccgs-ngcc.gc.ca

Subject: Bartlett Bid con questions

Hi Dave,

I think that went quite well today. Thought I would put my notes together for you to summarize some of the changes/clarifications we found at the viewing.

- 11.1.C.3 The lower identified hole must be repaired with a 12" doubler plate instead of an insert.
- 11.1.C.5 Gooseneck is not required, only a mushroom head vent as described in 11.1.C.6
- 11.1.D.1.3 NDT weld inspection must be quoted on as dye penetrant test.
- 11.2 Access to the electronics room must be maintained to the extent possible.

Docu**s**(16(2)) Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

- 11.2 Contractor must be responsible for testing for any possible asbestos. Remediation by 1379.
- 11.4.C fuel station save alls are 2" NPT Double bottom save alls are 1.5" NPT.
- 14.1.C While conducting megger survey the contractor must comply with the Coast Guard Technical bulletin on terminal tightness (I wil provide this tomorrow)

That is all I have.

Cell

Ed

Edward Wright
Senior Vessel Maintenance Manager | Gestionnaire principal de l'entretien des navires
Marine Engineering | Ingénierie Navale
Integrated Technical Services | Services Techniques Intégrés
Canadian Coast Guard | Garde Côtière Canadienne
PO box 6000 9860 West Saanich Rd. IOS room 2234A
Sidney, BC, V8L 4B2
edward.wright@dfo-mpo.gc.ca
Telephone | Téléphone 250-363-6603

CCG Bartlett Alongside Refit Bidder's Conference Minutes

XLV-6-39248

Solicitation No: F1782-17C810

Date: April 19, 2017 at 10:00 hrs

Location:

Conference Room, 21 Huron St., Victoria, BC.

Chaired by:

PWGSC Contracting Authority – Dave Castle

Attendees:

Technical Authority - CCGS - Edward Wright for Edward Camilleri

Inspection Authority – CCGS - Edward Wright for Edward Camilleri

Chief Engineer – CCGS – Ross McKenzie

Present Bidders:

ORDER of BUSINESS

- 1. CALL TO ORDER at 10:00 hrs.
 - Introductions
- 2. OPENING REMARKS

Edward Camilleri will be managing this contract for CCGS.

- 3. SCHEDULE
 - Work Period May 17 to June 14, 2017
 - Bid Close: April 26th, 2017
- 4. REVIEW OF SOLICITATION DOCUMENTS
 - NO ISSUES
- 5. REVIEW OF SPECIFICATIONS & VESSEL VIEWING
 - Copy of Megger testing template and Technical Bulletin on terminal tightness will be distributed see attached.

The following revisions are required for the specification;

- 11.1.C.3 The lower identified hole must be repaired with a 12" doubler plate instead of an insert.
- 11.1.C.5 Gooseneck is not required, only a mushroom head vent as described in 11.1.C.6
- 11.1.D.1.3 NDT weld inspection must be quoted on as dye penetrant test.
- 11.2 Access to the electronics room must be maintained to the extent possible.
- 11.2 Contractor must be responsible for testing for any possible asbestos. Remediation by 1379.
- 11.4.C fuel station save alls are 2" NPT Double bottom save alls are 1.5" NPT.
- 14.1.C While conducting megger survey the contractor must comply with the Coast Guard Technical bulletin on terminal tightness (See attached). Note: this instruction relates only to work in the specification.

Thank you to all who attended.

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CCG Bartlett Alongside Refit Loi sur l'accès à l'information. **Bidder's Conference Minutes**

XLV-6-39248

Dave Castle

No information has been removed or severed from this page

Page 2 of 2 7/28/18

CCGS BARTLETT Alongside Refit – May / June 2017

Specification No: F1782-17C810

Work Period:

May 17 to June 14, 2017

At: 21 Huron Street, Victoria BC V8V 4V9

Viewing date:
April 19, 2017
at 21 Huron Street Victoria BC
10:00 am to 12:00 pm

Prepared by:

Marine Engineering Western Region
P.O. Box 6000
9860 W. Saanich Rd.
Victoria BC
V8L 4B2

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G1.0 GENERAL

GENERAL NOTES

G 1.1 Vessel Particulars

G 1.1.1 Details

CCGS Bartlett
328107
7006778
Medium Navaids Tender
Home Trade I
1969 at Marine Industries Ltée, Sorel QC
57.68 m (189 Ft 3 ins)
51,74 m (169 ft 9 ins)
12.95 m (42 Ft 6 ins)
3.81 m (12.5 Ft)
1686.8 Long Tons
(98% consumables with deck and hold cargo)
1387 tons
2 x Mirrlees Blackstone KLSD M6 6-cylinder,
1565 kW (2100 bhp) total,
with 2 C.P. propeller shafts and 1 bow thruster

G 1.1.2 Equipment - Not Used

Equipment	Make	Model	Serial#	

G 1.2 References

G 1.2.1 Regulations

G 1.2.1.1 All regulations, standards, publications, and procedures listed below are to be used as reference. The Contractor will ensure all work completed in the specification are done to all pertinent federal and provincial regulations and

- standards. CCG procedures are to be used as a guide if no other regulation takes precedence.
- G 1.2.1.2 In the following table "Included Yes" means that the document will be provided by CCG to the contractor. "Included No" means that the contractor must obtain the document separately. "Included N/A" means that the document is not relevant to this specification.

FSM Procedures	Title	Included Yes/No
FSM	Fleet Safety Manual (Latest Edition)	Yes
Ship Specific	Vessel Specific - Asbestos Risk Assessment	Yes
	Report and Management Plan	
Ship Specific	Vessel Specific – Lead Paint Test Report	Yes
Publications		
TP 127	Ships Electrical Standards	No
TP 3669	Standards for Navigating Appliances and Equipment	N/A
TP3177	Standard for the Control of Gas Hazards in Vessels to be Repaired or Altered	No
TP 11469	Guide to Structural Fire Protection	No
TP 14231	Marine Occupational Health and Safety Program	No
TP 14612	Procedures for approval of Life-saving appliances and fire safety systems, Equipment and Products	No
TP 4414 E	Guidelines Respecting Helicopter Facilities on Ships.	N/A
IEEE 45	Institute of Electrical and Electronics Engineers, Recommended Practice for Electrical Installations on Shipboard	No
70-000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment	N/A
IEC 60533	Electrical and Electronic installations in ships – Electromagnetic Compatibility	No
IEC 60945	Maritime Navigation and Radio communication equipment and systems – methods of testing and required test results.	N/A

Standards			
CSA W47.1	Certification of Companies for Fusion Welding of Steel		
	Structures Division 2 Certification		
CSA W47.2	Certification of Companies for Fusion Welding of	No	
	Aluminum		
CSA W59	Welded Steel Construction – Metal Arc Welding	No	
CSA W59.2	Welded Aluminum Construction		
ISO 9712:2005	International Standards for NDT		
18-080-000-SG-001	Welding of Ferrous Materials		
18-080-000-SG-002	Welding of Aluminum and Aluminum Alloys	No	
SSPC	The Society for Protective Coatings		
ISO 8501-1:2007	Preparation of steel substrates before application of paints	No	
	and related products		
ISO 10816-1:1995	Mechanical vibration Evaluation of machine vibration by	No	
	measurements on non-rotating parts Part 1: General		
	guidelines		
Regulations			
MOHS	Maritime Occupational Health and Safety	No	
CSA	Canada Shipping Act 2001	No	
Machinery Regs.	Marine Machinery Regulations (SOR/90-264)	No	
Hull Regs.	Hull Inspection Regulations (C.R.C., C. 1432)	No	
Canada Labour Code	Canada Labour Code (R.S.C., 1985, c. L-2)	No	
WorkSafe BC.	Occupational Health and Safety (OHS) Regulation	No	
	http://www2.worksafebc.com/publications/OHSRegulation/		
	Home.asp?_ga=1.6448368.352535453.1408987357		

G 1.2.2 Guidance Drawings and Reference Documents

G 1.2.2.1 The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
B10-77-3	VLE Phase 2 General Arrangement-Profile Sheets 1 to 3 of 3 Rev 3
B10-43-1	Insulation Sheet 1 of 1 Rev 0.PDF
B10-1372-005	VLE Phase 2 Accommodation Insulation Plan.pdf

G 1.2.2.2 The following documents are provided. The Interspec is a paint specification that must be followed.

Document Number	DOCUMENT TITLE		
NW 10143	B10 - Lead test results 2009 May 8.pdf		
n/a	Interspec - Bartlett Coating Specification 04 09 2014 Rev1.pdf		
and the second s	micrspec - Bartiett Coating Specification 04 07 2014 Rev1.pdf		

G 1.2.3 Tanks

G 1.2.3.1 Listed are the tanks found on board the CCGS Bartlett with their Location by frame number and capacity (Where available). These are to be used as reference only and will not supersede any specification.

TCM Field No.	Tank name	Location	Capacity (m³)	
3L031	E. Generator Fuel Tank	Fr 11 – 13 Bridge Deck		
n/a	Lube Oil Storage Tanks A	Fr 23 – 25 Main Deck	9.91	
n/a	Lube Oil Storage Tanks B	Fr 23 – 25 Main Deck	8.49	
n/a	Lube Oil Storage Tanks C	Fr 23 – 25 Main Deck	8.49	
3L029	Day Fuel Tank	Fr 36.5 – 38 Main Deck	5.09	
3L013	Flume Stabilization Tank	Fr 51 – 56 below deck	99.13	
3L028	Aft Peak W.B. Tank	Fr –0 - 4	45.98	
3L027	Sterntube Compartment Void	Fr 4 - 13	N/A	
3L025	DB Fuel Tank No. 3 (void)	Fr 13 - 26		
3L024	Sea Box Starboard	Fr 25 - 26	N/A	
3L022	DB Fuel Tank No. 2 Port	Fr 26 - 44	45.43	
3L023	DB Fuel Tank No. 2 Starboard	Fr 26 - 44	43.83	
31021	Sea Boxes (port & starboard)	Fr 43 - 45	N/A	
31020	Sea Bay Across	Fr 44 - 45		

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3L018	Clean Fuel Tank Port	Fr 46 – 51	10.98
3L019	Clean Fuel Tank Starboard	Fr 46 - 51	10.98
3L016	Oil Fuel Bunker Port	Fr 46 – 51	22.06
3L017	Oil Fuel Bunker Starboard	Fr 46 - 51	22.06
3L013	Dump Tank Port	Fr 51 – 56	29.62
3L014	Dump Tank Starboard	Fr 51 -56	29.62
3L011	Drainwell Port	Fr 56 - 57	N/A
3L012	Drainwell Starboard	Fr 56 - 57	N/A
3L008	DB Fuel Tank No. 1 Port	Fr 56 - 71	51.03
3L009	DB Fuel Tank No. 1 Starboard	Fr 56 - 71	51.03
3L005	Cofferdam	Fr 71 - 72	·
3L006	FW Tank Port	Fr 72 - 80	26.20
3L007	FW Tank Starboard	Fr 72 - 80	26.20
3L004	Bow Thruster Compartment	Fr 80 - 87	N/A
3L003	Chain Locker	Fr 87 - 92	N/A
3L002	Fore Peak Water Ballast Tank	Fr 92 - 102	39.81

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G 1.2.4 Abbreviations

ACM	Asbestos Containing Material
CA	Contract Authority (PWGSC)
CCG	Canadian Coast Guard
CFM	Contractor Furnished Material and/or equipment
CLC	Canada Labour Code
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
DFO/CCG	Department of Fisheries and Oceans, Canadian Coast Guard
DFT	Dry Film Thickness
FSSM or FSM	I Fleet Safety Manual (CCG)
FSR	Manufacturer's Field Service Representative
GSM	Government Supplied Material and/or equipment
HC	Health Canada
IACS	International Association of Classification Societies
IEEE	The Institute of Electrical & Electronic Engineers Inc.
ITS - ME	Integrated Technical Services, Marine Engineering
ITS – E&I	Integrated Technical Services, Electronics & Informatics
LOA	Length Overall
MSDS	Material Safety Data Sheet
NDT	Non Destructive Testing
OHS	Occupational Health and Safety
PWGSC	Public Works and Government Services Canada
SSMS	Safety & Security Management System
RO	Recognized Organization as defined by Canada Shipping Act.
TA	Technical Authority -CCG Superintendent, Marine Engineering
	Western Region, or her delegated Representative.
TBS	Treasury Board of Canada Secretariat
TCMS	Transport Canada Marine Safety
TI	Technical Inspector – CCG delegated.
VCA	Vessel Condition Assessment
VLE	Vessel Life Extension
WCB	Workers' Compensation Board of North West Territories

G 1.2.5 List of GSM Material

G 1.2.5.1 The following items are supplied as GSM.

Part No.	Qty	DESCRIPTION
	T	
	1	
	C, = 2	
		•
	Part No.	Part No. Qty

G 1.3 Conditions and Definitions

- G 1.3.1 The following conditions and definitions are applicable to all work contained in the Specifications and are intended to outline the quality of workmanship and practice that is the minimum acceptable level:
 - a) the word "install" means that the Contractor must connect mechanically and electrically and provide the labour and materiel to complete the installation;
 - b) the word "reinstall" means a piece of equipment that the Contractor has effected repairs on and is to be returned/installed in its original location and be mechanically and electrically connected. The Contractor must provide the labour and materiel to complete the reinstallation;
 - c) the word "remove" means that the Contractor must provide all labour and materiel to remove the unit, equipment, materiel, or system in its entirety. Part of the removal process is to blank openings, restore insulation and paint;
 - d) the word "relocate" means that the Contractor must provide all labour and material to remove the unit, piece of equipment, or system and to install the same unit, piece of equipment, or system in the new location;
 - e) the term "or equivalent" means a substitute which has equal characteristics i.e. (size, materiel type, life, weight, input, and output) as approved by the TA. A comparison of the general specifications must be provided to the TA for the equipment specified and the "or equivalent" (i.e. old compared to the new);
 - f) the term "overhaul" as applied to any mechanical equipment, structure or system comprises: disassembly into component parts; cleaning examination of parts for defects; gauging of parts for wear; reporting of parts worn beyond specification limits or otherwise defective and reassembly followed by specification adjustments; tests; and functional trials;
 - g) the word "disconnect" means the Contractor must mechanically and electrically disconnect the piece of equipment of all piping, wiring, seatings and other attachments permitting the removal of the unit as a whole;
 - h) the word "disassemble" means that the Contractor must provide all labour to take apart, piece by piece, the equipment, machinery or system to be examined or repaired;

- i) the word "reassemble" means that the Contractor must provide all labour and material to put together, piece by piece, the equipment, machinery or system on completion of examination or repair;
- j) the words "Additional Work Procedures" means the procedures as defined in ANNEX G - PROCEDURE FOR PROCESSING UNSCHEDULED WORK and includes any additional work required on a system, sub-system or equipment which the original specification did not specify;
- k) the word "calibrate" means the adjustment of readings and measurements to a known standard:
- the word "check" means that the Contractor must provide labour to find faults by sighting, feeling or listening. The checking of any equipment does not involve the disturbance or removal of parts, components or sub-assemblies;
- m) the word "examine" means that the Contractor must provide labour for the process of systematically examining, checking and testing equipment, records or administrative procedures to detect actual or potential defects or errors;
- n) the word "test" means that the Contractor must provide labour to conduct the operation of a unit in relation to a stated standard or procedure;
- o) the words "set-to-work" means the tuning, alignment and adjustment of equipment/systems required subsequent to satisfactory installation. Inspection to make the equipment/systems ready for technical acceptance trials;
- p) the word "trials" is an element of QA that means an action(s) by which the Contractor proves by a visual or instrumental presentation that the equipment or system satisfies the requirements of the specified trials agenda; and
- q) the term "functional test" means operation of a piece of equipment in all its normal operating modes and throughout its operating range to establish that it will perform its designed function within normal operating parameters as indicated in the manufacturer's documentation.

G 1.4 Miscellaneous Information

G 1.4.1 Occupational Health and Safety

G 1.4.1.1 The Contractor and all sub-contractors must follow Occupational Health and Safety (OHS) procedures in accordance with applicable federal and provincial OHS regulations ensuring that Contractor activities are carried out in a safe manner and do not endanger the safety of any personnel. The Contractor and

Contractor's employees will not have access to the vessel's washrooms and crew mess facilities. The Contractor must provide the necessary amenities as required.

- G 1.4.1.2 Not Used.
- G 1.4.1.3 When the Contractor works on the vessel while in the Care and Custody of the Canadian Coast Guard, the Safety Management System of CCG must be followed.
- G 1.4.1.4 The Contractor must identify a specified person that is responsible for the safety management of the work site. The Safety Manager must insure that daily safety rounds are carried out and that safety issues are identified and safety precautions are maintained.
- G 1.4.1.5 Areas that pose a hazard as a result of the specification work are to be secured and clearly identified by the Contractor with signage to advise and protect all personnel from the hazard in accordance with applicable regulations.

G 1.4.2 Lead Paint and Paint Coatings

- G 1.4.2.1 The Contractor must not use lead based paints.
- G 1.4.2.2 CCG ships have been painted with lead based paints in the past and as a result some of the Contractor's processes such as grinding, welding and burning may release this lead from the coatings. The CCG will provide a lead test report from 2009 titled: "B10 Lead test results 2009 May 8.pdf".

G 1.4.3 Asbestos Containing Materials (ACM)

- G 1.4.3.1 The Contractor must use insulation that contains 0% ACM.
- G 1.4.3.2 The Contractor will be supplied the most recent Asbestos Risk Assessment Report and Asbestos Management Plan by CCG prior to commencement of work.
- G 1.4.3.3 Handling of any asbestos containing materials must be performed by trained personnel and/or a company certified in the removal of asbestos in accordance with Federal, Provincial and Municipal regulations.
- G 1.4.3.4 The Contractor must provide the TA with disposal certificates for all asbestos containing material removed from the vessel indicating that the disposal was in accordance with Federal, Provincial and Municipal regulations in effect.
- G 1.4.3.5 The Contractor must provide an "Observation Report (OR)" with reference to any concerns or intentions in regards to asbestos containing materials not already specified. The Contractor is to identify any materials that are suspected to contain

asbestos prior to any work being completed. Any approved work resulting from the OR will follow the Additional Work Procedures.

G 1.4.4 Confined Spaces

- G 1.4.4.1 Prior to commencing work in any confined space, the Contractor must ensure that a qualified person issues a "Gas Free Certificate" for that space. Certificates must specify, "Safe for persons" or "safe for hot work" as appropriate. Contractor must adhere to the safety management system requirements as determined in the Pre-Work Meeting. All copies of certificates generated are to be provided to the TA in accordance with the Documentation section of the General Notes.
- G 1.4.4.2 Any entry into confined spaces onboard the vessel during the contract period must be conducted in accordance with the safety management system as determined in the Pre-Work Meeting.

G 1.4.5 Hot Work

- G 1.4.5.1 The Contractor must, as a minimum, ensure the following items are followed when conducting any hot work:
 - a) The compartment(s) affected must be certified gas free by a qualified person. The Contractor must provide all certificates to the TA in accordance with the Documentation section of the General Notes. Certificates must specify, "Safe for persons" or "safe for hot work" as appropriate. The Contractor must post a copy of all certificates at the entrance to the affected spaces;
 - b) All portable combustible materials within 2m of hot work must be removed from the vicinity;
 - c) Protective material must be used to prevent the spread of sparks, protecting electrical cables and other services;
 - d) Fire sentries must be provided in each space and in the adjacent space where welding, grinding, or burning is being carried out on bulkheads, deck-heads or decks. Fire sentries must be provided with an appropriate fire extinguisher (Contractor supplied) and must be trained in its use. The fire sentry must maintain a watch in his designated area for at least thirty (30) minutes after any hot work has been completed.
- G 1.4.5.2 Any hot work carried out onboard the vessel during the contract period must be conducted in accordance with the safety management system. A copy of the site generated hot work permits must be provided to the TA in accordance with the

Documentation section of the General Notes named in accordance with the specification item generating the required work.

G 1.4.6 Work Aloft

G 1.4.6.1 Any work aloft onboard the vessel during the maintenance/refit period must be conducted in accordance with the safety management system. Notices must be placed to prevent operation of Radars while personnel are working aloft on the mast or on the wheelhouse top.

G 1.4.7 Electrical Equipment

- G 1.4.7.1 When working on electrically operated equipment, the following precautions must be taken at a minimum:
 - a) All electrical equipment undergoing work must be isolated at the main power and alternate distribution panel;
 - b) Electrical lock-outs must be used to isolate the equipment and electrical caution tags posted at the main power and distribution panel on those switches supplying equipment under maintenance and verification made at the terminals to ensure power is not present.
 - c) Only after completion of the work must the lock-outs and electrical caution tags be removed and the switches engaged.
- G 1.4.7.2 Any lock-out requirements onboard the vessel during the contract period must be conducted in accordance with the safety management system.
- G 1.4.7.3 The TA must be notified of all such ongoing work.

G 1.4.8 Workplace Hazardous Materials Information System (WHIMS)

- G 1.4.8.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor and sub-contractor supplied WHIMS controlled products.

 MSDS sheets are to be the formats requested in the Documentation section of the General Notes.
- G 1.4.8.2 All MSDS sheets must be maintained in accordance with OHS procedures.
- G 1.4.8.3 The TA will provide the Contractor with access to MSD sheets for all controlled products on the ship for all specified work items on request.

G 1.4.9 Smoking in the Work Space

G 1.4.9.1 The Contractor must ensure compliance with the Non- Smokers' Health Act. The Contractor must ensure that there is absolutely no smoking onboard the vessel by their employees, sub-contractors, including the employees of any sub-contractors.

G 1.4.10Touch-up / Disturbed Paint

G 1.4.10.1 The Contractor must prepare and coat all touch-up work in accordance with the paint specification provided for the particular area involved in accordance with the Interspec - Bartlett Coating Specification 04 09 2014 Rev1.pdf.

G 1.4.11Contractor Furnished Materials (CFM) and Tools

- G 1.4.11.1 The Contractor must ensure replacement material such as jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings etc. are in accordance with the equipment manufacturer's drawings, manuals and/or instructions.
- G 1.4.11.2 Where no particular item is specified or where substitution must be made, the Contractor must submit an Observation Report indicating the substitution or item not specified to the TA. The Contractor must provide information about materials used, certificate of grade and quality of various materials to the TA prior to use.
- G 1.4.11.3 The Contractor must provide all equipment, devices, tools and machinery such as cranage, staging, scaffolding, hoarding, and rigging necessary for the completion of the work in this specification.
- G 1.4.11.4 The Contractor must deliver and store all new CFM equipment at their facility. The CFM must be stored in a secure, environmentally controlled space in accordance with the equipment storage section of this specification.

G 1.4.12Government Supplied Materials (GSM) & Tools

- G 1.4.12.1 All tools are Contractor supplied unless otherwise stated in the technical specifications.
- G 1.4.12.2 Where tools are supplied by the TA they must be returned by the Contractor in the same condition as when they were borrowed. Borrowed tools must be inventoried and signed for by the Contractor on receipt and return to the TA.
- G 1.4.12.3 Any GSM not specifically stated in the Technical Specification must be received by the Contractor and stored in accordance with the Equipment Storage section of this specification. These activities are to be covered by the Procedures for Design Change or Additional Work. (PWGSC 1379).

G 1.4.13Storage

- G 1.4.13.1 Equipment (i.e. covers, cowling and other items that may need to be removed and stored) must be stored in accordance with the equipment manufacturer's or equipment vendor's specific storage instructions. The Contractor must make these instructions available to the TA.
- G 1.4.13.2 All equipment and items must be stored in such a manner so as to be easily accessible for inspection. No items are to be stored directly on floors.

G 1.4.14Regulatory Inspections and/or Class Surveys

- G 1.4.14.1 The Contractor must contact, coordinate, schedule, and be completely prepared for all regulatory inspections and surveys by the applicable authority: i.e. TCMS, HC, Environment Canada or others as indicated by individual specifications.
- G 1.4.14.2 Documentation generated by the above inspections and/or surveys indicating that the inspections and/or surveys were conducted (i.e. original signed and dated certificates) must be provided to the TA in accordance with the "Documentation" Section of these General Notes.
- G 1.4.14.3 The Contractor must not substitute inspection by the TA for the required regulatory inspections.
- G 1.4.14.4 The Contractor must provide timely advance notification (minimum of 2 working days) of scheduled regulatory inspections to the TA so they may witness the inspection.
- G 1.4.14.5 The Contractor must pay all costs and fees associated with TCMS, HC, Environment Canada, or any other Inspection required by the specification unless otherwise indicated.

G 1.4.15Contractor Inspections

- G 1.4.15.1 The Contractor must afford the opportunity for the TA to conduct an inspection with the contractor on the condition and location of items to be removed prior to either carrying out the specified work or gaining access to a location to carry out the work.
- G 1.4.15.2 The Contractor must take a before picture of conditions prior to removing any items. These photos are to be in accordance with the Documentation section of the General note, named according to the specification section that resulted in removing those items.

G 1.4.15.3 Prior to the close out of any item under this specification, the Contractor must afford the TA the opportunity to verify the work has been completed in accordance with the specification. At that time the contractor must have available all photo's, documents, reports, and trials in relation to the item being closed out as completed.

G 1.4.16Recording of Work in Progress

G 1.4.16.1 The TA may record any work in progress using various means including, but not limited to photography and video, digital or film.

G 1.4.17Access for Maintenance, Installation, and Removal.

- G 1.4.17.1 The layout of newly installed machinery and equipment must be designed and constructed to permit ready access for routine maintenance, operational checks and operational inspections without disturbance of other machinery, equipment or structure.
- G 1.4.17.2 The Contractor must determine best routes for installing and removing equipment. All lifting points currently fitted on the ship must be treated as uncertified, and must be certified before use by the Contractor.
- G 1.4.17.3 Any temporary lifting points installed by the contractor must be removed after work completion with welds ground flush, and paint coatings applied in accordance with the Interspec paint specification.
- G 1.4.17.4 Manufacturer's recommended removal clearances must be allowed for.
- G 1.4.17.5 After equipment installation and/or removal the Contractor must make good all equipment relocations, blemishes, and penetrations and must return the affected areas of the ship to the As-Delivered working condition.

G 1.4.18Assembly of Components

G 1.4.18.1 The Contractor must ensure that during installation of specified equipment, that parts and assembled equipment are cleaned of smudges, spatter or excess solder, weld metal and metal chips or any other foreign material which might detract from the intended operation, function, or appearance of the equipment. (This would include any particles that could loosen or become dislodged during the normal expected life of the equipment). All corrosive material must be removed. This cleaning must take place before the parts are assembled into the equipment.

- G 1.4.18.2 Covers, cowlings and components damaged by the Contractor must be replaced with a new CFM cover, cowling, or component.
- G 1.4.18.3 Where torque specifications are not provided by the manufacturer, standard SAE nut and bolt torques must be used.

G 1.4.19Protection of Equipment

- G 1.4.19.1 The Contractor must take measures to ensure that surfaces and components of equipment installed on the vessel are protected against damage, soiling, and contamination as a result of contracted work.
- G 1.4.19.2 All electrical and electronic equipment and components must be protected during the contract against physical damage, internal damage, and by the effects of adverse temperatures or other environmental conditions.
- G 1.4.19.3 The Contractor must protect equipment that could be damaged as a result of movement of materials and equipment nearby. The Contractor must also protect equipment from nearby sources of contamination including but not limited to burning, welding, grinding and painting..
- G 1.4.19.4 Any damage to surfaces, equipment, furnishings or decor incurred prior to acceptance must be returned to As Delivered condition by the Contractor.
- G 1.4.19.5 All openings in machinery and/or systems prior to connections being made must be kept covered by suitable inserts or covers at all times.
- G 1.4.19.6 The Contractor must obtain and follow instructions from its sub-Contractors for any special protection required for their equipment during the project work. Such instructions must be made available to the TA.
- G 1.4.19.7 Physical protection including but not limited to plastic sheets, fireproof covers, heavy weight material covers, wood plugs, wood encasements and heaters must be used as required.
- G 1.4.19.8 The Contractor must protect the vessel from the possibility of vermin infestation (insect/mammal/bird). If an infestation does occur during the contract period the Contractor must bear all costs to ensure the vessel is made vermin free before the vessel's departure and contract completion.

G 1.5 Documentation

G 1.5.1 Documentation is identified as a deliverable in the specification items requesting them.

G 1.5.2 Data Book

- G 1.5.2.1 The Contractor must provide all documentation generated as a result of specified deliverables in both electronic and paper formats. There must be 2 paper copies of each document, in two separate binders, as part of the contractors QA program. An electronic copy of all documentation must also be provided to the TA in accordance with the formats described in this specification item.
- G 1.5.2.2 All copies of documents generated as a result of specified deliverables will be referred to as the "Data Book".
- G 1.5.2.3 The Contractor must provide to the TA all the files generated as part of the Data Book must be received prior to the contract being considered complete. The files must be in hard format (CD-ROM, DVD-ROM, Flash Drive / Memory Stick). Each specification item is to have its own folder named according to the specification item. For example "G1.0 General Notes".
- G 1.5.2.4 Any documentation, media, and reports, that are the result of Additional Work, are also to be included as part of the Data Book.

G 1.5.3 File Naming

G 1.5.3.1 File naming must be in the following format: Specification#.# – Date (yyyy-mm-dd) – File Name Describing Information. For Example: "G1.0 – 2013-12-01 – Details of file naming.pdf".

G 1.5.4 E-mails

G 1.5.4.1 Any files sent to the CA/TA by e-mail must be named as per the "File Naming" section of this specification. All files that are e-mailed must have in the subject name: "Contract# - DATA BOOK - Date - Specification #". For Example: F1782-XXXXXX - DATA BOOK - 2014-11-30 - G1.0 General Notes. Files sent by e-mail must also be included in the "Data Book".

G 1.5.5 File Formatting

- G 1.5.5.1 All documentation, reports, test results, certificates, or data obtained by the contractor in paper form must be scanned into unprotected (preferably searchable) Adobe PDF formatted files and named according to the File Naming section of this specification.
- G 1.5.5.2 All reports, test results, certificates, or raw data obtained by the contractor in electronic format must be converted to unprotected Adobe PDF formatted files and named according to the "File Naming" section of this specification. Both the original and the converted copy are to be provided as part of the Data Book.

G 1.5.6 Photos

G 1.5.6.1 All photos obtained by the contractor as requested in the specification must be provided in .JPG formatted files at a resolution of at least 640 x 480 and named according to the "File Naming" section of this specification.

G 1.5.7 Measurements, Calibrations, and Readings.

- G 1.5.7.1 All measurements, calibrations and readings recorded, must be signed by the person taking the measurements, dated and scanned into electronic format as part of the Data Book.
- G 1.5.7.2 Recorded dimensions must be to a precision of three decimal places (unless otherwise stated) in the measuring system currently in use on the vessel.
- G 1.5.7.3 The Contractor must provide to the TA current and valid calibration certificates for all instrumentation used in the Test and Trials Plan showing that the instruments have been calibrated in accordance with the manufacturer's instructions. These copies are to be provided as part of the Data Book under any specification where measurements are required.

G 1.5.8 Test Inspection Records and Certificates

- G 1.5.8.1 Test Inspection Records and Certificates are identified as a deliverable in the individual specification item requesting them.
- G 1.5.8.2 Test Inspection Records and Certificates must be included as a separate section in the DATA BOOK and indexed/arranged in numeric order by specification number.
- G 1.5.8.3 The Contractor is responsible for maintaining a complete and accurate record of all tests and trials conducted on the vessel and on each piece of equipment. Prior to the commencement of a trial, all relevant documentation and associated test sheets, including shop test data, must be complete and attached to the trials agenda.
- G 1.5.8.4 All tests and trials data must be legible both in hard copy and electronic format. If necessary, handwritten records may require transcription into electronic format in order to be acceptable. The original must be signed by TCM, the TA, the Contractor and where necessary by the sub-Contractors and/or FSR's who witnessed the tests. All the Data must be submitted to the TA in accordance with the "Documentation" section of these General Notes.

G 1.6 Drawings

- G 1.6.1 This section, to be referred to as the Drawings section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be drawings.
- G 1.6.2 The contractor must have on staff or through a sub-contractor a person qualified and experienced in the use of AutoCAD who will create or modify drawings that result from the work.
- G 1.6.3 The Contractor must comply with the Canadian Coast Guard National CAD Standards titled "Computer Aided Design (CAD) using AUTOCAD" provided.
- G 1.6.4 Drawing disks must be clearly labeled with the Contract Number, file names and drawing numbers. If a complete listing exceeds the label size, a "readme.txt" file in ASCII format must be provided with each disk. A printed copy of the Readme file must accompany each disk. Disks must be labeled As-Fitted drawings for those drawings that have been approved and finalized.
- G 1.6.5 Final As-Fitted prints/plots must not contain markings or corrections by hand (i.e. marker, pen, pencil, etc.). Drawings containing mark-ups must be revised and reprinted/plotted.
- G 1.6.6 The Contractor must prepare all the working drawings necessary for the project requirements and modernization work.
- G 1.6.7 The Contractor must furnish all drawings required by sub-Contractors, trades and other consultants.
- G 1.6.8 Schematic drawings of systems must include all pertinent system information, including sizes, dimensions, labeling, equipment locations, and all information relating to system fittings.
- G 1.6.9 The Contractor must have in place a complete system of documenting and controlling all drawing revisions affected by the work of this project. Drawing numbering system and titles must match the original drawings for clarity and include a revision number with date.

G 1.6.10Guidance Drawings

G 1.6.10.1 All technical guidance drawings are issued to the Contractor for guidance purposes only. It is the responsibility of the Contractor to develop working drawings and to ensure that all such drawings receive applicable regulatory approval. The Contractor is to note that not all technical guidance drawings supplied are As-Fitted drawings. It is the responsibility of the Contractor to physically verify all affected items.

- G 1.6.10.2 All departures from the provided guidance drawings and project specifications must be clearly indicated by the Contractor and written approval obtained from the TA before carrying out such alterations or departures.
- G 1.6.10.3 Specification deviations must be documented using an Observation Report.

G 1.6.11As Fitted Drawings

- G 1.6.11.1 The As-Fitted Drawings are identified as a deliverable in the specification item requesting them.
- G 1.6.11.2 Upon completion of specified work, the Contractor must transfer the mark-ups from any working drawings where installation changes were made to drawings affected by the project work. These drawings become the As-Fitted drawings for the project work. The Contractor is responsible for providing updated vessel drawings affected by the project work to the TA prior to completion of the contract. The affected drawings must be submitted in the following formats:
 - a) Five (5) plotted copies of the latest revision of each of the As-Fitted drawings;
 - b) Two (2) electronic copies of the latest revision of each As-Fitted drawing.
- G 1.6.11.3 Plotted drawings must be on standard ANSI paper sizes.
- G 1.6.11.4 Marked up drawings are to be AutoCAD drawings where original AutoCAD drawings are provided. If no AutoCAD drawings were provided then scanned files (raster format) must be supplied to CCG in one of the following formats:
 - a) DXF format;
 - b) TIFF format;
 - c) PDF format.

G 1.7 Manuals

G 1.7.1 This section, to be referred to as the Manuals section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be manuals.

G 1.7.2 General

G 1.7.2.1 Instruction Manuals must be individually bound in a hard cover 3 ring book format with a page size of 8 1/2" x 11". Drawings of a larger size must be

concertina folded to suit. The covers must have the following information printed thereon:

- a) CCGS Bartlett;
- b) Equipment Identification;
- c) Equipment Manufacturer;
- d) Date.
- G 1.7.2.2 Plastic tabbed indices must be provided for all sections of the manuals. Major equipment components must be subdivided into separate sections of the manuals.
- G 1.7.2.3 A master index must be provided at the beginning of each binder indicating all items included in each section.
- G 1.7.2.4 A list of names, addresses and telephone numbers of contacts associated with the equipment manufacturers must be provided that can be used after the project completion for maintenance and information data purposes.
- G 1.7.2.5 A copy of the final reviewed and approved As-Fitted drawing(s) must be provided within the maintenance manual.
- G 1.7.2.6 One (1) electronic copy of each manual must be provided in accordance with the Data Book section of this specification.
- G 1.7.2.7 Two (2) paper copies of manuals and data sheets must be supplied in English for all Contractor Furnished Equipment items.

G 1.7.3 Operation Manuals – As-Fitted

- G 1.7.3.1 Operation manuals must include the following items:
 - a) General description of equipment operating sequence;
 - b) Step by step procedure to follow in commissioning the equipment;
 - c) Schematic wiring diagram for the fitted equipment; and
 - d) All pertinent equipment performance criteria.
- G 1.7.3.2 Where software/hardware systems are fitted, the operation manual must include the full software documentation manual in paper form for the system and an

electronic copy in accordance with the Documentation Section. The minimum software documentation must include:

- a) System level diagrams describing the overall scheme of the software/hardware system;
- b) The functional specifications, which must describe in detail the functional capabilities of the system and each software components; and
- c) Project specific program listings including all comments describing the details of the code functions.

G 1.7.4 Maintenance Manuals – As-Fitted

G 1.7.4.1 Maintenance manuals are to include:

- a) Manufacturer's maintenance instructions for each item of the equipment requiring maintenance activity;
- b) Instructions are to include installation instructions, part numbers, part lists, master drawings and exploded views with part identification for all mechanical, electrical and electronic parts, name of suppliers;
- c) Summary list of each item of the equipment requiring lubrication, indicating the name of the equipment item, location of all points of lubrication, type of lubricant recommended, and frequency of lubrication; and
- d) Troubleshooting sections must be included for all equipment in the maintenance manual under a separate heading.

G 1.8 Identification

G 1.8.1 Nameplates

- G 1.8.1.1 Nameplates are identified as a deliverable in the individual specification item requesting them.
- G 1.8.1.2 All nameplates must be in English, except where required in English and French by TCM for reasons of emergency operation.
- G 1.8.1.3 Lettering must be clear and concise with the minimum use of abbreviations. Primary information must be given in larger size lettering than secondary information.
- G 1.8.1.4 The type of nameplates must suit the location in the vessel as specified below:

G 1.8.1.5 Plastic:

- a) Laminated plastic nameplates, black with white core engraved through to the center core, must be provided for all devices located on the exterior surfaces of switchboards, MCC's, or local control panels. Nameplates must be secured to the equipment with machine screws.
- b) New nameplates to be fitted on the existing equipment must be consistent in size and lettering with those already fitted or those being replaced.
- c) Nameplates indicating feeder circuits must identify each circuit by name and number and the fuse size or trip element rating.
- d) The Following Labels must be of laminated plastic, red with white core engraved through to the center core:
- i) Safe Working Loads,
- ii) Warning/Caution labels,
- iii)Circuit Breakers with shunt trips requiring completion of remote circuits prior to being operated,
- iv) Equipment with multiple power sources,
- v) Circuit breaks having a potential power source connected to both sides
- vi)Indication of any other potentially hazardous condition.

G 1.8.1.6 Engraved on Metal:

- a) Must be used in machinery spaces and where exposed to the weather or susceptible to covering by paint, oil or grease. Nameplates exposed to weather must be stainless steel or brass. Engraved metal nameplates must be of stainless steel or brass with lettering accentuated by means of black wax unless otherwise noted, and secured with stainless steel or brass machine screws.
- b) A complete list of nameplates, detailing size of plate, size of lettering and inscription must be submitted to the TA for review prior to ordering and/or manufacturing.

G 1.8.2 Wire Labelling

G 1.8.2.1 Wire Labelling is identified as a deliverable in the individual specification item requesting them.

- G 1.8.2.2 All permanently installed cables must be tagged with the circuit designation at all points of connection and on both sides of bulkheads, decks, etc. Tags must be of metal compatible with the armor or cable sheathing. Both ends of the tags must be strapped to the cable with compatible metal strap after all painting has been completed. Straps must pass through holes in the tags so that tags are positively secured. Strap ends must be permanently folded and crimped. Adhesives of any kind will not be acceptable.
- G 1.8.2.3 All wiring in panels specified to be labelled must be labeled with the Cable Number and their conductor # unless otherwise specified in equipment installation drawings.

S1.0 SERVICES

S 1.1 GENERAL

- S 1.1.1 The Contractor must supply the following services to the vessel for the entire work period and disconnect upon completion of the work period.
- S 1.1.2 All staging, cranage, screens, lighting, and any other support service, equipment, and material necessary to carry out the work identified in these specifications must be Contractor supplied unless specifically noted otherwise.

S 1.2 WORKSITE INSPECTIONS

- S 1.2.1 During the work period, the Contractor must maintain their work areas in the vessel in a clean condition, free from debris and remove garbage daily.
- S 1.2.2 Upon completion of the contract, the Contractor must return the vessel to the As-Delivered state of cleanliness.
- S 1.2.3 Prior to the completion of the Acceptance Document, the Contractor's QA Representative, and the TA must perform an inspection of the vessel to view all areas where work was performed by the Contractor.
- S 1.2.4 Copies of all photos, documentation, and inspection sign off sheets must be provided in accordance with the Documentation section of the General Notes.

10.0 SAFETY AND SECURITY

10.1 ANNUAL LIFE RAFT SERVICE

10.1.A Identification

A.1 The contractor must remove the life rafts from the vessel and send to Survitec DBC Marine Safety systems for recertification.

10.1.B References

B.1 Equipment Data

	Mfg.			Class of	Person		
Location	Date	Туре	Serial No.	Emerg Pack	S	Next	Hydrostatic
						Annual	Release Expiry
		RFD					
Port Boat	02/201	SURVIVA	5.14171E+1	:		06/201	
Deck	0	MK 4	2	Α	20	7	06/2018
		RFD					
Port Boat	02/201	SURVIVA	5.14171E+1			06/201	
Deck	0	MK 4	2	Α	20	7	06/2018
		RFD					
Port Boat	02/201	SURVIVA	5.14171E+1			06/201	
Deck	0	MK 4	2	Α	20	7	06/2018
Stbd		RFD					
Bridge	02/201	SURVIVA	5.14171E+1			06/201	
Deck	0	MK 4	2	Α	20	7	06/2018
Stbd		RFD					
Bridge	02/201	SURVIVA	5.14171E+1			06/201	
Deck	0	MK 4	2	Α	20	7	06/2018
Stbd		RFD					
Bridge	02/201	SURVIVA	5.14171E+1			06/201	
Deck	0	MK 4	2	Α	20	7	06/2018
Boat Deck	11/199					06/201	(No Hydrostatic
Aft SAR	5	DBC	2948-6RBR	В	6	7	Release)

- B.2 Drawings Not Used
- B.3 Regulations and Standards
 - B.3.1 Canada Shipping Act 2001
 - B.3.2 Canadian Life Saving Appliance Standard TP 14475 E

- B.3.3 IMO Resolution A.761(18)
- B.3.4 Requirements from Manufacturer

10.1.C Statement of Work

- C.1 The contractor must collect the life rafts from jetty at the vessel and ship to Survitec DBC at the first opportunity in order to insure no delay in the liferafts return to the vessel.
 - C.1.1 DBC Marine Safety Systems Ltd.

1689 Cliveden Avenue

Delta, BC, V3M 6V5, Canada

Ph: 1-604-278-3221

Fax: 1-604-278-7812

Toll Free: 1-800-931-3221 (In North America)

- C.2 The liferafts must be re-certified by Survitec DBC
- C.3 Any deficiencies with the liferafts will be actioned by PWGSC 1379.
- C.4 Life rafts must be returned recertified to the vessel by June 14th, 2017. The liferafts will be re-installed by the ship's crew.

10.1.D Proof of performance

- D.1 Inspection Points Not Used
- D.2 Testing/Trials Not Used
- D.3 Certification
- D.3.1 The liferafts must all be recertified in accordance with Canadian Life Saving Appliance Standard TP 14475 E
- D.3.2 The liferafts must meet all manufacturers recommendations for annual maintenance
- D.4 Documentation
 - D.4.1 The contractor must provide an original copy of the certificates for each life raft.
 - D.4.2 Certificates must be addressed to the Canadian Coast Guard, CCGS Bartlett and not to the Contractor.

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D.5 Training – Not Used

No information has been removed or severed from this page

11.0 HULL AND RELATED STRUCTURES

11.1 PORT STORES STEEL REPAIRS/VENT INSTALL [TCMS INSPECTION]

11.1.A Identification

- A.1 The contractor must make steel repairs to the port bulkhead of port stores.
- A.2 The contractor must install a vent for port stores [TCMS Inspection]

11.1.B References

- **B.1** Equipment Data
- B.1.1 Not used.
- **B.2** Drawings
 - B.2.1 B10-77-3 General Arrangement

B.3 Regulations and Standards

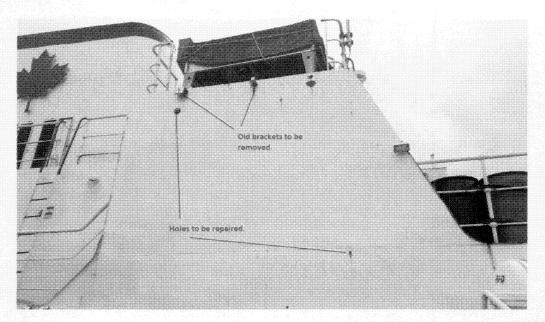
B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
	Guide to Structural Fire Protection, TP 11469	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

11.1.C Statement of Work

C.1 The Contractor must remove the storage cabinets in way of the repairs to facilitate access. The contractor must replace the storage cabinet once repairs are finished.

- C.2 The contractor must strip back insulation in way of the repairs in order to facilitate safe hotwork access. Following repairs the contractor must replace the insulation as it was originally found.
- C.3 The contractor must crop and weld two 12" diameter insert plates in way of the identified holes. Plate thickness is \(\frac{1}{4} \)".



- C.4
- C.5 The contractor must install a vent for the port stores space using a gooseneck in the deck above the space. The vent must be fitted with a method of being isolated.
- C.6 The vent must be constructed of 8" Sch 40 pipe. Mushroom head vent complete with internal fire damper (CO2 locker vent heads to be used as a sample). Method of securing the damper in the open and closed position. Two options: reuse old directional antenna base (blanking flange installed covering hole in deck) or crop base and install new vent place. See picture:



- C.7
- C.8 Port Stores outboard bulkhead. Two old brackets to be cropped and ground flush.
- C.9 Removed/disturbed insulation and cladding to be replaced with new. Currently fitted 2" of 2.5lb BX-Spintex insulation (mineral wool) and 16 gauge steel expanded metal cladding. Secured with 10 gauge pins, clips and aluminium covers.
- C.10 Disturbed coatings to be repaired: (interior requires Intershield 300 HS only)
- C.11 2 coats Intershield 300 HS
- C.12 1 coat Intergard 263
- C.13 2 coats Interlac 665 White

11.1.D Proof of Performance

D.1 Inspection Points

- D.1.1 The TA must inspect the bulkheads after any hotwork prior to installation of insulation.
- D.1.2 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds for the vent piping only
- D.1.3 Welding must be in accordance with the General Notes and welds must be NDT inspected by an independent welding inspection company.
- D.1.4 The TA must inspect the final installation.

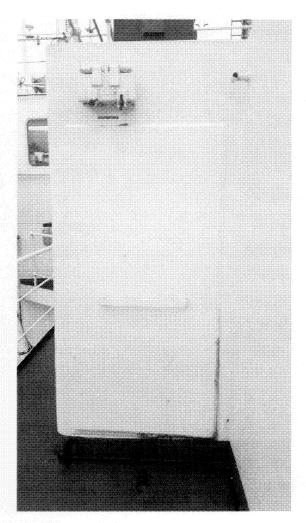
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- D.2 Testing/Trials
 - D.2.1 Not used.
- **D.3** Certification
- D.3.1 The insulation must be certified as suitable for the application.
- D.4 Documentation
 - D.4.1 The contractor must provide copies of the TCMS or Classification society approval certification for the material used.
- D.5 Training Not Used

11.2 BLANKED OFF DOOR REPAIRS [POSSIBLE ASBESTOS]

11.2.A Identification

A.1 The contractor must make repairs to the former access door to the Navigation Bridge Deck



A.2

11.2.B References

B.1 Equipment Data

B.1.1 Nav bridge deck door/library area has two longitudical Marinite asbestos bulkheads. The aft bulkhead is obscured by shelving/cabinets. The deck has vinyl tiles known to have 2% Chrysotile asbestos content. Insulation behind the panels is 2" 2.5lb BX spintex mineral wool.

B.2 Drawings

B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
B10-77-3	General arrangement
388-43-1	Insulation
1086A	Construction Section of Twin Screw Inshore Supply & Buoy Vessel for the Department of Transport

B.3 Regulations and Standards

B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
	Guide to Structural Fire Protection, TP 11469 E	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

11.2.C Statement of Work

- C.1 The contractor must clear remove all cabinetry, bulkhead panels and insulation from the spaces adjacent the repairs (ships library). All cabinetry, bulkhead panels and insulation must be replaced as found following repairs.
- C.2 The contractor must crop out and dispose of the former door frame from the bulkhead.
- C.3 The contractor must weld in insert plates in place of the door frame. Insert plates to be ½" thickness.
- C.4 The contractor must touch up areas of disturbed paint in accordance with the vessels existing paint scheme.

- C.5 The contractor is to apply Two coats Intershield 300 HS, Tie-coat of Intergard 263 and top-coat with two coats of Interlac 665 White. For the outside. Inside the two coats of Intershield 300HS is sufficient.
- C.6 Any asbestos remediation work will be actioned by PWGSC 1379

11.2.D Proof of Performance

D.1 Inspection Points

- D.1.1 The TA must inspect the bulkhead after any hotwork prior to installation of insulation.
- D.1.2 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds.
- D.1.3 Welding must be in accordance with the General Notes and welds must be NDT inspected by an independent welding inspection company.
- D.1.4 The TA must inspect the final installation.

D.2 Testing/Trials

D.2.1 Not used.

D.3 Certification

D.3.1 The insulation must be certified as suitable for the application.

D.4 Documentation

- D.4.1 The contractor must provide copies of the TCMS or Classification society approval certification for the material used.
- D.4.2 The contractor must provide copies of the weld procedure for new inserts.

D.5 Training – Not Used

11.3 CHAIN LOCKER AND BOWTHRUSTER VOID SOUNDING TUBE SOCKET REPLACEMENT

11.3.A Identification

A.1 The contractor must crop out and replace the existing sounding tube sockets.

11.3.B References

B.1 Equipment Data – Not Used

B.2 Drawings

B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE		
B10-77-3 General arrangement			

B.3 Regulations and Standards

B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
	Guide to Structural Fire Protection, TP 11469 E	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

11.3.C Statement of Work

- C.1 The contractor must gas free and make safe for entry and hotwork the chain locker and bowthruster void spaces.
- C.2 The contractor must crop out and replace the existing sounding tube sockets for the chain locker and the bowthruster void space.
- C.3 The replacement sounding tube sockets will be GSM Wager stainless sockets with brass plugs.
- C.4 The connection method to the existing sounding tube sockets must be Victaulic type with either Lloyds or ABS approval.

11.3.D Proof of Performance

D.1 Inspection Points

- D.1.1 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds.
- D.1.2 Welding must be in accordance with the General Notes and welds must be dye penetrant tested and witness by the TA or delegate.
- D.1.3 The TA must inspect the final installation.

D.2 Testing/Trials

D.2.1 Not used.

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 Not used

D.5 Training – Not Used

11.4 TANK CATCH-ALL DRAINS BUNG CROP AND REPLACE

11.4.A Identification

A.1 The contractor must crop out and replace 4 drain bungs from the catch-alls identified herein.

11.4.B References

B.1 Equipment Data

- B.1.1 #1 Port double bottom catch-all
- B.1.2 #1 Starboard double bottom catch-all
- B.1.3 Aft well deck port fueling station catch-all
- B.1.4 Aft well deck starboard fueling station catch-all

B.2 Drawings

B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
B10-77-3	General arrangement

B.3 Regulations and Standards

B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included
		Yes/No
Publications		
	Guide to Structural Fire Protection, TP 11469 E	No

Standards		
Regulations		
	Canada Shipping Act 2001	No

11.4.C Statement of Work

- C.1 The contractor must crop out and replace the drain bungs from the catch alls identified. The catch all couplings are 1.5" NPT. The contractor must replace with new CFM stainless steel bungs.
- C.2 The contractor must touch up paint as per the vessels existing paint scheme.

11.4.D Proof of Performance

D.1 Inspection Points

- D.1.1 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds.
- D.1.2 Welding must be in accordance with the General Notes and welds must be dye penetrant tested and witnessed by the TA or delegate.
- D.1.3 The TA must inspect the final installation.

D.2 Testing/Trials

D.2.1 Not used.

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 Not used

D.5 Training – Not Used

12.0 PROPULSION AND MANEUVERING

12.1 STARBOARD MAIN ENGINE TURBOCHARGER MOUNTING BRACKET REPLACEMENT

12.1.A Identification

A.1 The contractor must remove and replace the starboard main engine turbocharger bracket with a new CFM bracket.

12.1.B References

- **B.1** Equipment Data
- B.1.1 Not Used
- **B.2** Drawings
- B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
n/a	

B.3 Regulations and Standards

B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included
		Yes/No

Publications		
	Guide to Structural Fire Protection, TP 11469 E	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

12.1.C Statement of Work

- C.1 Coast Guard will drain and refill the jacket water from the engine.
- C.2 The contractor must remove:
 - C.2.1 Two inlet exhaust manifold bellows
 - C.2.2 One outlet exhaust bellows.
 - C.2.3 Two jacket water connections
 - C.2.4 Compressor outlet to intake manifold elbow/coupling
 - C.2.5 Turbocharger assembly using GSM lifting bracket. Turbocharger must be suitably supported and landed in a suitable location identified by the TA.
 - C.2.6 Cast Iron turbocharger bracket
- C.3 The contractor must transport the cast iron turbocharger bracket to United Engineering so that the old bracket can be used as a template to fabricate new out of mild steel. United Engineering fabricated a new bracket for the port main engine in the past.

United Engineering

2066 Henry Avenue West in Sidney, BC

Or:

327G Harbour Road in Victoria, B.C.

Contact: John Van Munster (250) 940-0984

C.4 The contractor must transport the new bracket back to the vessel and re-install on the starboard main engine.

C.5 Exhaust system and turbocharger must be re-assembled how it was found. Gaskets for re-installation will be GSM.

12.1.D Proof of Performance

- **D.1** Inspection Points
- D.1.1 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to survey the new bracket prior to installation
- D.2 Testing/Trials Not Used
- D.3 Certification Not Used
- D.3.1 The contractor must provide sufficient notice to allow for the TA and TCM or delegate to inspect the weld preparation and welds.
- D.3.2 Welding must be in accordance with the General Notes and welds must be NDT inspected as per United Engineering Quality Control System.
- D.3.3 The TA must inspect the final installation.
- D.4 Documentation Not Used
- D.5 Training Not Used

13.0 POWER GENERATION SYSTEMS

13.1 SHIP SERVICE GENERATORS ANNUAL INSPECTION

13.1.A Identification

- A.1 The contractor must sub-contract, to Finning Ltd., to complete an annual engine service, and generator service on all 3 ship service generators. Contact: Matt Clare, Finning Nanaimo, tel 250 753 2441, cel 250 713 4289.
- A.2 Vibration testing on the three generators must be completed at the start of the work to determine if bearing replacement is required. Any bearing replacement will be by the work arising process (1379 action). Finning must sub-contract the vibration testing to Emery Electric.

A.1 Equipment Data

A.1.1 No. 2 SSG

Genset Package No. SJB00929

Engine Serial No. C9Z00220

A.1.2 No. 1 SSG

Genset Package No. SJB00928

Engine Serial No. C9Z00219

A.1.3 No. 3 SSG

Genset Package No. SJB00931

Engine Serial No. C9Z00223

A.1.4 Both Generators:

No. 2 Generator Serial No. 244377 / 3 No. 1 Generator Serial No. 244377 / 4 No. 3 Generator Serial No. 244377 / 2 Leroy Somer LSA M46.219C6/4 60 Hz, 1800 RPM, Protection 1P23 P.F. 0.8 Th Class H A.V.R. R448 ARED

NDE bearing 6315 2RS

Weight 775 Kg

Voltage 480, Phase 3, Cont. 312 KVA, Base 250 kW, 50 °C 375A.

A.2 Drawings

A.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing	DRAWING TITLE	Number of
Number	DRAWING TITLE	Sheets

A.3 Regulations and Standards

A.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		The control of the co
Standards	TP 127 "Ships Electrical Standards	No
	IEEE Standard 45-2002 entitled "Recommended Practice for Electric Installations on Shipboard 2002	No
	CGTS-3 entitled "General Specifications for the Installation of Shipboard Electronic Equipment".	
Regulations	Canada Shipping Act 2001	No
	Marine Machinery regulations (SOR/90-264)	No

13.1.B Statement of Work

B.1 Vibration testing must be completed on all three generators before any disassembly, to determine if generator bearing replacement is required.

- B.2 Prior to disassembly Finning must complete a performance test on all three genset engines using Cat ET.
- B.3 On all genset engines the crankcase breather must be cleaned.
- B.4 On all genset engines the after cooler must be cleaned and tested. Any replacement will be by 1379 action.
- B.5 On all genset engines the heat exchanger (JW cooler) must be cleaned and pressure tested.
- B.6 On all genset engines the HEUI pump magnetic cover plate must be inspected for any signs of metal. (Note: each HEUI pump, with integral fuel transfer pump, was replaced in 2012.)
- B.7 On all genset engines a coolant sample must be tested to determine ELC condition. If required coolant will be changed using GSM coolant.
- B.8 On all genset engines, the thermostats must be replaced with new GSM thermostats.
- B.9 Upon reassembly of cooling system. Pressure test of cooling system must be performed according to the Cat Service Manual.
- B.10 On all genset engines, the valve clearances must be checked and adjusted.
- B.11 On #2 SSGs the cam follower spring retaining clips must be replaced by the contractor with updated part (cylinder head removal required on SSG#2).

 Replacement gaskets to be CFM (Finning)
- B.12 Engines must be re-assembled per manufacturer's recommendations and subjected to an operational check.

13.1.C Proof of Performance

C.1 Inspection Points

C.1.1 All disassembled components must be made available for inspection by the TI/TA.

C.2 Testing/Trials

- C.2.1 Finning must complete a performance test on both engines using Cat ET.
- C.2.2 Finning must use Emery Electric to conduct vibration testing on 3 generators. Any required generator bearing replacement will be by 1379 action

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- C.3 Certification Not Used
 - C.3.1 Certificates in accordance with the Documentation section of the General Notes.
- C.4 Documentation
- C.4.1 The contractor must supply a report from Finning documenting the work completed.
- C.5 Training Not Used

14.0 POWER DISTRIBUTION SYSTEMS

14.1 ANNUAL MEGGER SURVEY

14.1.A Identification

A.1 The contractor must perform the annual megger survey on the vessel using the template attached as Annex A Annual meggar survey template.

14.1.B References

- **B.1** Equipment Data
- B.1.1 Annex An Annual Megger Survey Template
- **B.2** Drawings Not Used

B.3 Regulations and Standards

B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
TP 127	Ships Electrical Standards	No
IEEE 45	Recommended practice for Electrical Installations on Shipboard	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

14.1.C Statement of Work

- C.1 The contractor must conduct the annual megger survey on the vessel using the attached template
- C.2 Any deficiencies found during the survey will be actioned by PWGSC 1379.

14.1.D Proof of Performance

- **D.1** Inspection Points
 - D.1.1 The contractor is to allow the TA to inspect any deficiencies found.
- D.2 Testing/Trials Not Used
- **D.3** Certification
- D.3.1 Not used.
- **D.4** Documentation
- D.4.1 The contractor must include a report (completed version of Annex A) which includes results after any repairs have been actioned.
- D.5 Training Not Used

14.2 SHIP SERVICE GENERATOR AND SHORE POWER BREAKER 5 YEAR SURVEY

14.2.A Identification

- A.1 The contractor must perform the 5 year survey on the 3 ship service generator breakers, emergency generator and one shore power breaker.
- A.2 The contractor must stagger the breaker service so that the ship is able to maintain electrical power.

14.2.B References

B.1 Equipment Data

Breaker Designation	Serial #	Trip Unit Serial #	Long-term Pickup/Delay	Short-term Pickup/Delay	Instantaneous Pickup
#1SSG	20200657322	01922086	400A /4sec	800A/0.3sec	6400A
#2SGG	20200657323	01922135	400A /4sec	800A/0.3sec	6400A
#3SSG	20200657324	01922125	400A /4sec	800A/0.3sec	6400A
ShorePower	20200657325	01922058	320A/4Sec	1280/0.3Sec	6400A
E-gen	85198186801	01206474	400/1sec	800/0.3Sec	4800A

Common Information for All 5 Breakers

MFG	Family	Breaker Type	Trip Unit Family	Trip Unit Type	Sensor Rating
Schneider	MasterPact	NW08	Micrologic	5.0A	800A

B.2

B.3 Drawings – Not Used

B.4 Regulations and Standards

B.4.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No

D 110		
Publications		
TP 127	Ships Electrical Standards	No
IEEE 45	Recommended practice for Electrical Installations on Shipboard	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

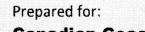
14.2.C Statement of Work

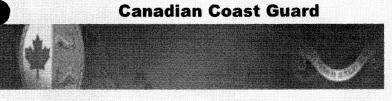
- C.1 The contractor must perform 5 year maintenance on the breakers identified including primary injection testing, contact resistance, trip functionality, accuracy.
- C.2 The TA and TCMS inspector must be given the opportunity to witness testing and view disassembled breakers. Minimum 72 hours' notice must be given by the contractor to co-ordinate inspection.
- C.3 Any deficiencies found during the survey will be actioned by PWGSC 1379.

14.2.D Proof of Performance

- **D.1** Inspection Points
 - D.1.1 The contractor is to allow the TA to inspect any deficiencies found.
- D.2 Testing/Trials Not Used
- **D.3** Certification
- D.3.1 Not used.
- D.4 Documentation
- D.4.1 The contractor must include a report of all findings and test results to the TA for submission to TCMS.
- D.5 Training Not Used

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CCGS Bartlett Asbestos Inventory 2017

Prepared By:



North West Environmental Group Ltd. #201-415 Gorge Road East Victoria B.C. V8T 2W1

July 2017 Project# 32927

Prepared for: Canadian Coast Guard



Contact:

Canadian Coast Guard, Marine Engineering PO Box 6000, 9860 West Saanich Road Sidney BC V8L 4B2 Tel. 250 363-6601

Project:

CCGS Bartlett Insulation Report July 2017

Prepared by:



#201-415 Gorge Road East Victoria B.C. V8T 2W1

Phone: 250-384-9695 Fax: 250-384-9865

Email: northwest@nwest.bc.ca



Distribution:

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SEE GENERAL NOTES

CCGS Bartlett

Asbestos Condition Report

General Notes

The following is the latest Asbestos Condition Report for this vessel.

North West Environmental Group Ltd. (NWest) Technologist conducted an asbestos assessment survey of the Canadian Coast Guard Ship (CCGS) Bartlett on May 27, 2016... This report is not intended for use as a scope of work for removal or as a specification section for inclusion in Tender Documents. Material identification noted herein is based on:

- Visual assessment of the ship.
- On-site labeling.
- Previous testing and assessments by NWest.
- Previous testing and assessments by others.

Partial History of CCGS Bartlett and Asbestos Abatement

2009-2010

The CCGS Bartlett underwent a Vessel Life Extension (Phase I and II) at Allied Shipyards between June 2009 and 2010.

According to abatement documentation prepared by Allied Shipbuilders Ltd. (ASL) and made available by the Canadian Coast Guard (CCG), asbestos abatement during this Vessel Life Extension (VLE) included:

- Removal of all deckhead support structure.
- Removal of asbestos containing insulation on steam and domestic lines.
- Removal of asbestos containing mastic at all windows.
- Removal of asbestos containing paneling in the way of drop windows.
- Removal of floor covering in the Galley, Mess and Lounge.
- Removal of deck steel plate from outboard bulk head to approximately 6' to 8' inboard in various Upper Deck compartments, the Poop Deck, and the Wheelhouse Top.
- Floor tiles in alleyway to Radio Room and Bridge and N-03 (Radio Room).

NWest was unable to verify the extent of the deck plate removal during the post VLE survey as all finishings were re-fitted or covered before NWest's assessment. NWest did not oversee this work and cannot verify effectiveness of abatement efforts.

2017

As per a risk assessment conducted by Arec Environmental Group (Arec) and a work procedure written by Hazpro Environmental (Hazpro), removal of asbestos-containing polymer bulkhead panels in the ship's Library was undertaken. Other ACM remains, including deck tiles, deck screed, and adjacent ACM bulkhead panels.

NWest did not oversee this work and cannot verify effectiveness of abatement efforts.

Previous Data Included in this Report

NWest has incorporated the following bulk sample results from previous assessments into this report. NWest's analytical results are appended to this report (Appendix B) and documentation by others can be obtained from the CCG.

- NWest project 16579, January 2012
- NWest project 17679, June 2012
- NWest project 25017, April 2015
- NWest project 25366, June 2015



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SEE GENERAL NOTES

CCGS Bartlett
Asbestos Condition Report

- NWest project 25637, June 2015
- NWest project 28534, February 2016
- NWest project 29600, May 2016
- NWest project 32927, June 2017
- Allied Shipbuilders Ltd. Asbestos Management Plan, September 2010
 - Pacific Environmental Consultants (PEC), Bulk Sample Reports, 2010
- Author not specified, 2.11B Steel Repairs decks Rev 0 (PDF entitled Deck Renewals)
- Arec Environmental (Arec), Limited Hazmat Survey for Library, May 2017
- Hazpro Environmental, Work Procedures for Library Bulkhead Panels, May 2017
- Pinchin Harris Holland Associates Ltd (PHH), Bulk Sample Analysis Results for Project 4595; Canadian Coast Guard Bartlett, undated
- United Engineering, CCGS Bartlett Anchor Windlass Inspection Report, June 15, 2015

NWest did not oversee bulk sample collection that may have been conducted by other consulting firms and cannot verify that all samples were collected in accordance with WorkSafeBC requirements (e.g. that samples were cut down to base substrate in all cases).

Note 1: WorkSafeBC reduced the maximum allowable concentration of asbestos in non-vermiculite bulk materials from 1% to 0.5% in 2012. Any negative results (i.e. no asbestos detected or results less than 1% asbestos) prior to this change are subject to additional testing using current allowable concentrations. Negative results should be disregarded until further testing confirms the asbestos status of the material.

Suspect Asbestos Containing Materials on This Vessel

Because the CCG continues with its asbestos removal and abatement program, there may have been some changes made after this report was printed.

In any case of uncertainty, all material must be considered 'asbestos containing' until it has been properly identified.

Since asbestos has been found historically in a variety of common insulating materials aboard this and similar vessels, the following materials should be considered asbestos-containing unless otherwise stated. Note that this list is neither exhaustive nor all-inclusive:

- Gaskets on flanges, valves, fire doors, and equipment.
- Insulation inside and around fire doors.
- Inside capstan and transformer insulators.
- Textured and anti-sweat coatings on ventilation trunking, bulkheads, deckheads, stiffeners, and around
 portholes and windows found throughout the ship.
- Older style round lighting fixtures.
- All concealed pipe insulation, textile wrap and fittings above suspended T-bar and deckhead tiles.
- Insulating wraps and insulation remnants under newer non-asbestos containing pipe insulation.
- Cement board and fibreboard spacers and shims concealed behind suspended deckhead tiles and bulkhead paneling, including behind original plywood marine panels.
- Exterior and interior deck screed (any cement-like deck material or anti-skid coating). Asbestos-containing remnants may be present under newer layers.
- Sheet and tile flooring products concealed beneath carpeting or other flooring layers.



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Canadian Coast Guard
July 2017

SEE GENERAL NOTES

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Asbestos Condition Report

- Coatings and insulation remnants, including mastics, found behind non-asbestos-containing insulation such as mineral fibre.
- Marinite panels behind new metal cladding panels and/or debris within bulkhead cavities.
- Electrical conduit and wire insulation.
- Penetration insulation/packing/caulking (in particular, older concealed layers)
- Inside and/or between fixed equipment.
- Dust and/or debris adjacent to damaged asbestos-containing materials.
- Valve, flange and equipment gaskets.
- Mechanical vibration dampeners.

An asbestos risk assessment by a qualified person as defined by Labour Canada and WorkSafeBC must be completed prior to any removal and/or alteration work aboard the vessel. Removal and/or alteration work requires control measures to be implemented in accordance with Labour Canada, WorkSafeBC regulations, and Canadian Coast Guard site-specific requirements. Protective personal equipment is required during any work or alteration that may disturb synthetic or asbestos insulation and/or dust that may be present. Hazardous materials other than those known or suspected to contain asbestos are not included herein.

The following table summarises the observed and/or tested suspect materials on this vessel. Non-homogeneous materials as noted in the table below, such as anti-sweat paint and deck screed, were sampled at damaged locations only. Additional representative sampling of non-homogeneous materials is required in order to confirm the asbestos status of these materials.

Note 2: Other hazardous materials including, but not limited to, lead, crystalline silica, and vitreous fibres may be present and have not been included in this report. These and other hazardous materials must be assessed and removed in accordance with Labour Canada, WorkSafeBC regulations, and Canadian Coast Guard-specific requirements.



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The following table summarises suspect and confirmed asbestos containing materials identified on the CCGS Bartlett.

Table 1: Asbestos Risk Assessment – Asbestos Containing Materials (Suspect and Confirmed) See Appendix A for description of assessment criteria

		S	Suspect Asbestos Containing Materials	s Containing M	aterials	
Deck	Compartment	Material	Condition	Friability	Accessibility	Recommendations/Comments
E V	Throughout. May be present beneath newer non-ACM layers.	Penetration caulking (various colours)	роо5	Non-friable	Access (A) – Accessible to all vessel users	This is a non-homogenous material. Treat as asbestos containing unless additional
					Access (C) Concealed –	testing is conducted prior to
					Areas of the building which require removal of a	disturbance to confirm asbestos status.
-					building component	A
					!	Action / – Monitor in place with routine surveillance.
All	Throughout (generally	Water sealant	Good	Non-friable	Access (A) – Accessible to all	This is a non-homogenous
	present in mechanical	(various colours)			vessel users	material. Treat as asbestos
	and electrical spaces					containing unless additional
-	and on electrical					testing is conducted prior to
_	components on the					disturbance to confirm asbestos
	outer decks)					status.
						Action 7 – Monitor in place with
						routine surveillance.
Deck 3	Exterior decks, various	Anti-skid coating	Good-Fair	Non-friable	Access (A) – Accessible to all	This is a non-homogenous
	interior compartments	(original coatings			vessel users	material. Treat as asbestos
		beneath newer				containing unless additional
-		non-asbestos				testing is conducted prior to
		coatings)				disturbance to confirm asbestos
***						status.
						Action 7 – Monitor in place with
						routine surveillance.
All	Throughout	Gaskets (various	Good-Fair	Non-friable	Access (D) – Concealed,	This is a non-homogenous
		colours)			requiring demolition/	material. Treat as asbestos
					dismantlement of finishing	containing unless additional



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Table 1: Asbestos Risk Assessment – Asbestos Containing Materials (Suspect and Confirmed) See Appendix A for description of assessment criteria

		S	Suspect Asbestos Containing Materials	s Containing N	laterials	
Deck	Compartment	Material	Condition	Friability	Accessibility	Recommendations/Comments
					materials or mechanical equipment	testing is conducted prior to disturbance to confirm asbestos
						status.
						Action 7 – Monitor in place with
						routine surveillance.
Deck 3	Emergency Generator	Asbestos liner or	Unknown	Friable	Access (D) Concealed	Action 7 Monitor in place with
	Room (B15)	acoustic phone			requiring	routine surveillance.
		booth casing			demolition/dismantlement	
		insulation			of finishing materials	

		8	Confirmed Asbestos Containing Materials	os Containing A	Materials	
Deck	Compartment	Material	Condition	Friability	Accessibility	Recommendations/Comments
Ail	Various	Floor tile	роо5	Non-friable	Access (A) – Accessible to all vessel users	Action 7 Monitor in place with routine surveillance.
Deck 4 Deck 3 Deck 2 Deck 1	Throughout. Some localized removal was undertaken in various areas on the Upper Deck, Poop Deck, and Wheelhouse Top, however, there is no clear demarcation of new deck screed (nonsuspect) and previously applied deck screed (suspect), therefore, all should be treated as ACM. See document Deck	Deck screed and amosite insulation /insulation block (brown fibres) concealed beneath the screed	Screed: Good-Fair Amosite: Debris (concealed)	Screed: Non-friable Amosite: Friable	Screed: Access (A) – Accessible to all vessel users Amosite: Access (D) Concealed requiring demolition/dismantlement of finishing materials	Screed: This is a non-homogenous material. Treat all damage as asbestos-containing unless additional testing is conducted prior to disturbance to confirm asbestos status. Action 7 Monitor in place with routine surveillance. Amosite: Action 7 Monitor in place with routine surveillance.

SEE GENERAL NOTES

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		3	Confirmed Asbestos Containing Materials	os Containing P	Aaterials	
Deck	Compartment	Material	Condition	Friability	Accessibility	Recommendations/Comments
	Renewals, for details.					
All	Throughout	Marine panels (Marinite-type)	Exposed: Good-Fair	Non-friable	Exposed: Access (A) - Accessible to all vessel users	Action 7 Monitor in place with routine surveillance.
			Concealed: Unknown		Concealed: Access (C) Concealed – Areas of the building which require removal of a building	
All	Throughout	Red duct mastic	Concealed: Unknown	Non-friable	Access (C) Concealed – Areas of the building which require removal of a	Action 7 Monitor in place with routine surveillance.
All	Throughout	Pipe Insulation and/or remnants including	Exposed: Good	Friable	Exposed: Access (A) - Accessible to all vessel users	Action 7 Monitor in place with routine surveillance.
		cementitions elbows and fitting	Concealed ~ Unknown		Concealed: Access (C) Concealed – Areas of the	
					building which require removal of a building	
					component	

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Compartment by Compartment Assessment 1.0

The following section details the observations and testing conducted on this vessel for asbestos-containing materials. See Appendix A for a description of the assessment criteria. Material conditions may have changed since the site assessment. Hazardous materials other than asbestos may be present. A project-specific risk assessment meeting Labour Canada Regulations, WorkSafeBC Regulations, and Coast Guard-specific requirements must be completed prior to any alteration, renovation, or refit work.

The compartment-by-compartment sections are to be read in conjunction with the General Notes.



SHE GENERAL NOTES

Deck 5 Wheelhouse Top	elhouse Top						Wheelhouse Top
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Not Applicable (N/A)	N/A	N/A	N/A	N/A	N/A	N/A
Bulkhead	N/A	N/A	N/A	N/A	N/A	N/A	A/N
Lagging	None observed	N/A	N/A	N/A	N/A	A/N	N/A
Deck	Anti-skid coating	May contain asbestos in original coatings beneath newer non-asbestos coatings	good	Non- friable	A	7	
Other	Water Sealant (brown) wrap with mastic.	May contain asbestos	good	Non- friable	∢	7	
Comments	N/A		***************************************				



Doublief well

Canadian Coast Guard July 2017

SEE GENERAL NOTES

Deck 5 Wheelhouse Top	lhouse Top						No. 2 A/C Plant
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bulkhead	Styrofoam.	No suspect asbestos.	N/A	A/N	N/A	N/A	-
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photo not available
Lagging	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Cementitious elbows and fittings.	Pipe elbows and fittings contain asbestos based on sample results:	N/A	Friable	<	7	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	A/A	Photo not available
Comments	N/A		***************************************				



SEE GENERAL NOTES

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Deck 5 Wheelhouse Top	elhouse Top						Funnel Casing
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	A/N	N/A	N/A	N/A	
Lagging	High temperature jacket.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Textile and plastic moulding over fibrous insulation (Navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Cementitious elbows and fittings.	Pipe elbows and fittings contain asbestos based on sample results:	Good	Non- friable	<	7	



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Deck 5 Wheelhouse Top	lhouse Top						Funnel Casing
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		collected by PHH.					
Deck	Checker plate metal catwalk.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Paint metal.	No suspect asbestos.	N/A	N/A	N/A	A/N	
Comments	N/A		***************************************	***************************************			



SEE GENERAL NOTES

A leemonse	Accessibility Recommended Photograph Action	N/A N/A	N/A N/A	N/A N/A	C (concealed) 7 Photograph not available.
	Friability	A/N S	N/A	Z	Friable
	Condition	N/A	N/A	N/A	poog
	Asbestos Content	No suspect asbestos.	No suspect asbestos.	No suspect asbestos.	Pipe lagging contains asbestos based on sample results: collected by PHH
Deta 4 Navigation Blidge Deta	Material	Metal deckhead tiles over fibrous insulation.	Port & Starboard: Wood panels.	Non-asbestos marine panel.	Pipe lagging.
DECN 4 INGVIES	Inspection Zone	Deckhead	Bulkhead		Lagging



SHE GENERAL NOTES

Deck 4 Navig	Deck 4 Navigation Bridge Deck	ŏ					Wheelhouse
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
digi.	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non- friable	C (concealed)	7	
Deck	Carpet	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Floor Tile	Floor tile contains asbestos based on sample results: • 32927-1: Chief Engineer (B-6) (1% Chrysotile)	poog	Non- friable	⋖	_	
	Deck screed	Deck screed contains asbestos based on sample results:	Unknown	Non- friable	D	7	
		Deck screed and brown insulation (NWest)					
Comments	N/A			·		***************************************	



SEE GENERAL NOTES

Deck 4 Navig	Deck 4 Navigation Bridge Deck	¢					E.R. Port Stores
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



SEE GENERAL NOTES

Deck 4 Navi	Deck 4 Navigation Bridge Deck						Beneath Wheelhouse
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A			***************************************			



SHE GENERAL NOTES

CO2 Room (N07)	Photograph				
	Recommended Action	N/A	N/A	N/A	N/A
	Accessibility	N/A	N/A	N/A	N/A
	Friability	N/A	N/A	N/A	N/A
	Condition	N/A	N/A	N/A	N/A
	Asbestos Content	No suspect asbestos.	No suspect asbestos.	No suspect asbestos.	No suspect asbestos.
Deck 4 Navigation Bridge Deck	Material	Perforated metal over fibrous insulation (Fibreglass-type).	Perforated metal over fibrous insulation (Fibreglass-type).	Textile wrap over fibrous insulation (Fibreglass-type).	High temperature jacket.
Deck 4 Naviga	Inspection Zone	Deckhead	Bulkhead	Lagging	



SEE GENERAL NOTES

Deck 4 Navig	Deck 4 Navigation Bridge Deck						CO2 Room (N07)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Other	Water sealant (beige).	May contain asbestos.	900g	Non-friable	4	7	
Comments	New door (non-asbestos; 2016)	bestos; 2016)					



SEE GENERAL NOTES

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Deck 4 Navig	Deck 4 Navigation Bridge Deck						Stairway to Wheelhouse
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	Good	Non-friable	∢ .	7	
Lagging	Not observed.	No suspect asbestos.	N/A	N/A	N/A	₹ <u>N</u>	Photograph not available.
Deck	Resilient sheet flooring over	No suspect asbestos in sheet flooring	N/A	N/A	N/A	N/A	
	deck screed. Floor tiles may be present.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown (concealed)	Non-friable	۵	7	
		Floor tiles, if present, presumed to contain asbestos based on	Unknown (concealed)	Non-friable	۵	7	



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SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 4 Navig	Deck 4 Navigation Bridge Deck	ķ					Stairway to Wheelhouse
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		sample results: • 32927-1 Floor Tile (Tan) NWest • Collected by PEC					
Comments	No information on	Comments No information on the removal of the asbestos containing floor tiles during the 2009-10 VLE.	stos containing f	floor tiles during	the 2009-10 VLI	Ē,	

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Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Foil-faced fibrous insulation (Roxul-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	Compartment was	Compartment was undergoing refit during the 2017 assessment.	the 2017 assess	iment.			



SECENERAL NOTES

מפנה ד ואמשו	Deta 4 Navigation Billuge Deta	4				אוופל	Alley to communication centre
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	рооб	Non-friable	⋖	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	рооб	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non-friable	(concealed)	7	
Deck	Epoxy flooring, possibly over asbestos containing floor tiles and/or deck screed.	Epoxy may contain asbestos.	рооб	Non-friable	ď	7	



SEE GENERAL NOTES

Deck 4 Navig	Deck 4 Navigation Bridge Deck	×				Alley t	Alley to Communication Centre
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains	Unknown	Non-friable	0	7	
_		asbestos based on					
		sample results:					
		• 16579-1 to 3					
		Deck screed and					
_		brown insulation					
		(NWest)					
_		collected by PEC					
		Floor tiles, if present,	Unknown	Non-friable	D	7	
_		presumed to contain	(concealed)				
		asbestos based on					
_		sample results:					
		32927-1 Floor					
		Tile (Tan) NWest					
		 Collected by PEC 					
Comments	N/A				:		



SEE GENERAL NOTES

							T-AI) IIIOOIIIEBAA
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marine panels contain asbestos based on sample results: • collected by PHH	Good	Non-friable	4	7	
Lagging	Pipe insulation.	Pipe insulation contains asbestos based on sample results:	Poog	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: collected by PEC	рооо	Non-friable	(concealed)	2	Photograph not available.



SEE GENERAL NOTES

Deck 4 Navi	Deck 4 Navigation Bridge Deck	*					Washroom (N-12)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Epoxy flooring over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation	N/A Unknown	N/A Non-friable	N/A D	N/A 7	
		collected by PEC					
Comments	N/A						



SEE GENERAL NOTES

Deck 4 Navig	Deck 4 Navigation Bridge Deck					Communicat	Communication Centre/ Server Room
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Foil-faced fibrous insulation (Roxul-type).	No suspect asbestos,	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over foil-faced fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Armaflex insulation on ducts.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non-friable	(concealed)	7	
Deck	Epoxy over deck screed.	Epoxy may contain asbestos.	Good	Non-friable	<	7	



SEE GENERAL NOTES

eck 4 Navig	Deck 4 Navigation Bridge Deck	ick				Communical	Communication Centre/ Server Room
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non-friable	٥		
Comments	N/A						



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Deck 4 Navig	Deck 4 Navigation Bridge Deck					Co	Communication Centre Closet
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	None observed.	N/A	N/A	N/A	N/A	N/A	Photograph not available.
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

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Deck 4 Naviga	Deck 4 Navigation Bridge Deck						Spare (N-5)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	роод	Non-friable	∢	7	
Lagging	Armaflex insulation on ducts.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Pipe lagging	Pipe lagging contains asbestos based on sample results:	Unknown (concealed)	Friable	(concealed)	7	



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Deck 4 Navigation Bridge Deck					Spare (N-5)
Asbestos Content C	Condition	Friability	Accessibility	Recommended Action	Photograph
Red duct mastic Go contains asbestos based on sample results: • collected by PEC	Good	Non-friable	(concealed)	7	
Floor tile contains asbestos based on sample results: • 32927-1: Chief Engineer (8-6) (1% Chrysotile)	Unknown	Non-friable	۵		
	Unknown	Non-friable	۵	7	
collected by PEC					



SEE GENERAL NOTES

Deck 3 Boat Deck	eck						Chief Officer (B-8)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Unknown	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	poog	Non-friable	(concealed)	7	Photograph not available.



Deck 3 Boat Deck	eck						Chief Officer (B-8)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	and/or deck screed.	Deck screed contains asbestos	Unknown	Non-friable	۵		
		based on sample					
		Se					
		• 165/9-1 (0.3 Deck screed and					
		brown					l
		insulation					1
		(NWest)					
		 collected by PEC 					
		Floor tiles, if	Unknown	Non-friable	۵	7	· · · · · · · · · · · · · · · · · · ·
		present, presumed	(concealed)				
		to contain asbestos					
		based on sample					S. P. S.
		results:					
		32927-1 Floor					A THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.
		Tile (Tan) NWest					
		 Collected by 					
		PEC					
Comments	N/A						



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 3 Boat Deck)eck						Chief Officer Washroom
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation (Fibreglass- type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poog	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	роод	Non-friable	C (concealed)	7	
Deck	Epoxy coating over deck screed.	Epoxy (Rada) is non- ACM as per manufacturer.	N/A	N/A	N/A	N/A	



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SEE GENERAL NOTES

Deck 3 Boat Deck	eck						Chief Officer Washroom
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: • 16579-1 to 3	Unknown	Non-friable	۵	7	
		Deck screed and brown insulation (NWest) collected by PEC					
Comments	N/A						



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 3 boat Deck	400						(o-q) laaliigiileel (o-q)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	A/N	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poog	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non- friable	C (concealed)	7	



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SEE GENERAL NOTES

Deck 3 Boat Deck	Deck						Chief Engineer (B-6)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile and/or deck	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	screed	Deck screed contains asbestos	Unknown	Non- friable	۵		
		based on sample results:					
		• 16579-1 to 3 Deck screed and					
		brown					\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\
		(NWest)					
		١ŏ	Unknown	Non-	0	7	
		present, presumed	(concealed)	friable			
		to contain aspestos based on sample					
		results:					
		32927-1 Floor Tile (Tan)					
		NWest					
		Collected by PEC					
Comments	A/N						



SEE GENERAL NOTES

Deck 3 Boat Deck	Deck						Commanding Officer (B-3)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	Good	Non- friable	(concealed)	7	
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	۷ ۷	N/A	N/A	
	and/or deck screed	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non- friable	Q	7	



SEE GENERAL NOTES

Deck 3 Boat Deck	Deck						Commanding Officer (B-3)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Friability Accessibility	Recommended Action	Photograph
		Floor tiles, if present,	Unknown	Non-	D	7	
	W. 400,	presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		Collected by PEC					
Comments N/A	N/A						



SEE GENERAL NOTES

Deck 3 Boat Deck	t Deck					Commandi	Commanding Officer's Washroom (B01)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over foil-faced fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	Good	Friable	(concealed)	7	Ohotograph not available
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: collected by PEC	рооб	Non- friable	(concealed)	7	
Deck	Epoxy coating over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A	



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 3 Boat Deck	Deck					Commandi	Commanding Officer's Washroom (B01)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		Deck screed contains	Unknown	Non-	D	7	
		asbestos based on		friable			
		sample results:					
		• 16579-1 to 3				•	
	-	Deck screed and					
		brown insulation					
		(NWest)					
		 collected by PEC 					
Comments N/A	N/A						

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SE GENERAL NOTES

CCGS Bartlett **Asbestos Condition Report**

Deck 3 Boat Deck	t Deck						Starboard Alleyway Out (1)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	Good	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non- friable	(concealed)	7	
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest	Unknown	Non- friable	Q	7	Photograph not available.



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SEE GENERAL NOTES

Deck 3 Boat Deck	Deck						Starboard Alleyway Out (1)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
Comments N/A	N/A						



SEE GENERAL NOTES

Deck 3 Boat Deck	t Deck						Fan Room (B9)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	A/N	N/A	N/A	N/A	ラブへ
	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	0
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe insulation.	Pipe lagging suspected of containing asbestos based on sample results: collected by PHH collected by PEC	Good	Friable	⋖	7	
	Ducts: Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Armaflex insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	



SEE GENERAL NOTES

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Deck 3 Boat Deck	Deck						Fan Room (B9)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Red duct mastic.	Red duct mastic contains asbestos based on	Good	Non- friable	C (concealed)		
		sample results: • collected by PEC					
Comments	N/A						



SEE GENERAL NOTES

Deck 3 Boat Deck	Deck						Port Linen Locker
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Wood	No suspect asbestos.	N/A	N/A	N/A	N/A	A
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	Photograph not available.
Deck	Carpet over deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non- friable	۵	7	
Comments	N/A						



SEE GENERAL NOTES

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Deck 3 Boat Deck	: Deck					Fo	Forward Athwartship Alleyway
Inspection Zone	Material	Asbestos Content	Condition	Friabillity	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos containing marine panel	Marine panels contain asbestos based on sample results:	Good	Non- friable	∀	7	
Lagging	None observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Resilient sheet	Resilient sheet flooring – no suspect asbestos	A/A	N/A	N/A	4 /N	
	asbestos tile and/or deck screed	Deck screed contains asbestos based on sample results:	Unknown	Non- friable	۵	7	
		 16579-1 to 3 Deck screed and brown 					
		insulation (NWest) • collected by PEC					
		Floor tiles, if present, presumed to contain asbestos based on sample results:	Unknown (conceale d)	Non- friable	۵	7	
		32927-1 Floor Tile (Tan) NWest					



SEE GENERAL NOTES

Asbestos Condition Report CCGS Bartlett

Deck 3 Boat Deck	: Deck					Fo	Forward Athwartship Alleyway
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		Collected by PEC					
Comments N/A	N/A						



SEE GENERAL NOTES

Deck 3 Boat Deck	t Deck				Forwa	d Stairwell (Dec	Forward Stairwell (Deck 3 Boat Deck to Poop Deck)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	000 poo	Friable	(concealed)	7	Obotodo do dos dos dos dos dos dos dos dos d
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	D005	Non- friable	(concealed)	7	Tiotogiapii not avallable.
Deck	Resilient sheet flooring over asbestos tile and/or deck screed	Resilient sheet flooring - no suspect asbestos Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation	N/A Unknown	N/A Non- friable	N/A D	N/A 7	



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SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 3 Boat Deck	Deck				Forwar	d Stairwell (De	Forward Stairwell (Deck 3 Boat Deck to Poop Deck)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Friability Accessibility	Recommended Action	Photograph
		(NWest) • collected by PEC					
		Floor tiles, if present,	Unknown	Non- friable	O	7	
		asbestos based on	(collegaed)	פסק			
		sample results: • 32927-1 Floor Tile					
		(Tan) NWest			•		
		Collected by PEC					
Comments	N/A					-	

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SEE GENERAL NOTES

Deck 3 Boat Deck	Deck						Boat Gear Locker (B11)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	∀ /N	A/N	√N ∀/N	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	Photograph not available.
Deck	Painted metal.	No suspect asbestos.	N/A	A/N	A/N	N/A	
Comments	N/A						



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 3 Boat Deck	Deck					Emerg	Emergency Generator Room (B15)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over foil-faced fibrous insulation (Roxul-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over foil-faced fibrous insulation (Roxul and Fibreglass-types).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	A/A	N/A	N/A	N/A	
Lagging	Pipe Runs: Textile wrap over fibrous insulation (Fibreglass- type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	High temperature	No suspect asbestos.	N/A	N/A	N/A	N/A	



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SEE GENERAL NOTES

Deck 3 Boat Deck)eck					Emerg	Emergency Generator Room (B15)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	jacket.						
	Pipe elbows: Cementitious elbows and fittings.	Pipe lagging suspected of containing asbestos based on sample results: • collected by PHH • collected by PEC	рооб	Friable	٩	2	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Other	Acoustic phone booth.	Liner or insulation - may contain asbestos.	Unknown	Friable	۵	7	
Comments	N/A					***************************************	



SHE GENERAL NOTES

Deck 3 Boat Deck)eck						Battery Room (B13)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	A/N	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe runs: Textile wrap	No suspect asbestos.	N/A	N/A	N/A	N/A	
	over fibrous insulation (Fibreglass-type).						
	Pipe elbows: Cementitious elbows and fittings.	Pipe lagging contains asbestos based on sample results:	poog	Non-friable	∢	7	
		collected by PEC					



SEE GENERAL NOTES

Deck 3 boat Deck	eck						Battery Room (B13)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Anti-skid coating.	May contain asbestos in original coatings beneath newer non- asbestos coatings	good	Non-friable	٨	7	



SEE GENERAL NOTES

					SAR Equipment (B14)
Asbestos Content		Condition Friability	Accessibility	Recommended Action	Photograph
Perforated metal over fibrous insulation (Fibreglass-type).	estos. N/A	N/A	N/A	N/A	
Perforated metal over fibrous insulation (Fibreglass-type).	stos.	N/A	N/A	N/A	
No suspect asbestos.	rtos. N/A	N/A	N/A	N/A	
Pipe runs: Textile No suspect asbestos. wrap over fibrous insulation (Fibreglass- type).	10s. N/A	N/A	N/A	N/A	



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Deck 3 Boat Deck)eck						SAR Equipment (B14)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Pipe elbows: Cementitious elbows and fittings.	Pipe lagging contains asbestos based on sample results: collected by PHH collected by PEC	рооб	Non- friable	٧	7	
	Ducts: Perforated metal over foil-faced fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	Good	Non- friable	(concealed)	7	
Deck	Anti-skid coating	May contain asbestos in original coatings beneath newer nonasbestos coatings	9009	Non- friable	۷	7	
Comments	N/A						



SHE GENERAL NOTES

Deck 3 Boat Deck	Deck						Port Alleyway (Out)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Deck	Resilient sheet flooring over	Resilient sheet flooring – no suspect asbestos	A/N	N/A	N/A	N/A	
	asbestos tile and/or deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non- friable	۵		



SEE GENERAL NOTES

Deck 3 Boat Deck	leck						Port Alleyway (Out)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest • Collected by PEC	Unknown (conceale d)	Non- friable	Q	7	
Comments	N/A						

SEE GENERAL NOTES

Deck 3 Boat Deck	ıt Deck					Supe	Superstructure (Outer Deck)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	6.0
Lagging	17oz Grey canvas jacketing over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	R
	Metal over fibrous insulation.	No suspect asbestos.	A/N	N/A	N/A	N/A	100
Deck	Anti-skid coating.	May contain asbestos in original coatings beneath newer nonasbestos coatings	p009	Non- friable	∢	7	
Comments	N/A						



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck					Sei	Second Officer's Cabin (P3)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	goog	Non- friable	⋖	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: collected by PHH collected by PEC	poog	Friable	C (concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	роод	Non- friable	(concealed)	7	Photograph not available.
Deck	Carpet over asbestos tile and/or deck	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck					Sec	Second Officer's Cabin (P3)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	screed	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown inculation (MMACH)	Unknown	Non- friable	Q	7	
		collected by PEC					
		Floor tiles, if present, oresumed to contain	Unknown	Non- friable		7	
		asbestos based on	ō				
		• 32927-1 Floor Tile					
		(Tan) NWest Collected by PEC					
Comments	Liner under window re	Liner under window removed during VLE 2009-2010	10.				

SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Third Officer's Cabin (P-1)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos containing Marinite panels (except under windows).	Marinite panels contain asbestos based on sample results:	p009	Non- friable	۷	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	D005	Friable	(concealed)	7	40
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non- friable	(concealed)	7	רווטנטפּן מאָדון וויטנ מאמוומטופּ.
Deck	Carpet over asbestos tile and/or deck	Carpet – no suspect asbestos.	A/N	A/N	N/A	N/A	\$
	screed	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown	Unknown	Non- friable	Q	7	W)



SEE GENERAL NOTES

Deck 2 Poop Deck)eck					Ţ	Third Officer's Cabin (P-1)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Friability Accessibility	Recommended Action	Photograph
		insulation (NWest) collected by PEC				TOTAL COMPANY OF THE PARTY.	
		Floor tiles, if present,	Unknown	Non-	D	7	
		presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		Collected by PEC					***
Comments	Liner under window re	Liner under window removed during VLE 2009-10.					

SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck & roop Deck	ן אפרא						
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	роод	Non- friable	⋖		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	роод	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	роод	Non- friable	(concealed)	7	Photograph not available.
Deck		No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



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Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	Fair	Non- friable	4	5/6	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: collected by PHC	poog	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: collected by PEC	Good	Non- friable	(concealed)	7	
Deck	Resilient sheet flooring over	Resilient sheet flooring - no suspect asbestos	A/N	ĕ,	N/A	N/A	
	asbestos tile and/or deck screed.	Deck screed contains asbestos based on sample results: 16579-1 to 3 Deck screed and brown	Unknown	Non- friable	Δ	7	



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SEE GENERAL NOTES

Asbestos Condition Report CCGS Bartlett

Deck 2 Poop Deck	ck						Alley to Crew's Mess
Inspection Zone	Material	Asbestos Content	Condition	Friability	Friability Accessibility	Recommended Action	Photograph
		insulation (NWest) collected by PEC					
		Floor tiles, if present,	Unknown	Non-	D	7	
		presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		 Collected by PEC 					
Comments	N/A						



SEE GENERAL NOTES

CCGS Bartlett **Asbestos Condition Report**

tiles over fibrous insulation (Fibreglass-type). Fibreglass-type). No suspect asbestos.	nspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
ng Pipe lagging. Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC Red duct mastic. Red duct mastic contains asbestos based on sample results: • collected by PEC Red duct mastic contains asbestos based on sample results: • collected by PEC Epoxy coating over Epoxy (Rada) is nondeck screed. ACM as per manufacturer. Deck screed contains asbestos based on sample results: • asbestos based on sample results: • 16579-1 to 3 Deck	ckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Pipe lagging. Pipe lagging contains asbestos based on sample results: Collected by PHH Collected by PHH Collected by PEC Red duct mastic contains asbestos based on sample results: Collected by PEC Red duct mastic contains asbestos based on sample results: ACM as per manufacturer. Deck screed. Deck screed contains asbestos based on sample results: Deck screed contains ASM as per manufacturer. Deck screed contains asbestos based on sample results:	Ikhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Red duct mastic. Red duct mastic contains asbestos based on sample results: • collected by PEC Epoxy coating over Epoxy (Rada) is non-deck screed. ACM as per manufacturer. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck	ging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	роод	Friable	(concealed)	7	Photograph not available.
Epoxy coating over Epoxy (Rada) is nondeck screed. ACM as per manufacturer. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck		Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Pood	Non- friable	(concealed)	7	
ntains on 3 Deck	ck	Epoxy coating over deck screed.	Epoxy (Rada) is non- ACM as per manufacturer.	N/A	N/A	N/A	N/A	
screed and brown insulation (NWest) • collected by PEC			Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non- friable	۵	7	ISM 1



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SEE GENERAL NOTES

CCGS Bartlett

Asbestos Condition Report

Deck 2 Poop Deck	Deck				9	St auspected to have pre	Starboard Dry Stores Locker (Suspected to have previously been the incinerator room)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal panels.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Metal panels.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Deck	Epoxy coating over deck screed.	Epoxy may contain asbestos. Deck screed contains asbestos based on sample results: 16579-1 to 3 Deck screed and brown	Good Unknown	Non- friable Non- friable	A Access D	7 7	
Comments	N/A	insulation (NWest) collected by PEC					



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SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Port Dry Stores Locker
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal panels.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Metal panels.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Deck	Epoxy coating over deck screed.	Epoxy may contain asbestos. Deck screed contains asbestos based on sample results: 16579-1 to 3 Deck screed and brown insulation (NWest)	Good Unknown	Non- friable Non- friable	Α Ο	L	
Comments	N/A						



SEE GENERAL NOTES

Asbestos Condition Report CCGS Bartlett

							CT I) SCOLL S SCOLD
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	37
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poog	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	Good	Non- friable	(concealed)	7	
Deck	Epoxy coating over deck screed.	Epoxy may contain asbestos.	Good	Non- friable	4	_	
		Deck screed contains asbestos based on sample results:	Unknown	Non- friable	۵	L	
		16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC					
Comments	N/A						



SE GENERAL NOTES

Deck 2 Poop Deck	Deck						Galley (P16)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Metal panels over fibrous insulation	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	Good	Friable Non-	(concealed)	7	Photograph not available.
	אכם מכנו וומסוני.	asbestos based on sample results: collected by PEC		friable	(concealed)	,	
Deck	Epoxy coating over deck screed.	Epoxy (Rada) is non- ACM as per manufacturer.	N/A	N/A	N/A	N/A	



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Galley (P16)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non- friable	۵		
Comments	A/N				•		



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck					ชั	Crew's Lounge and Canteen
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.
Deck	Epoxy coating over deck screed.	Epoxy may contain asbestos. Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Good	Non- friable Non- friable	A Access D	7 7	
Comments	Liners removed during VLE 2009-2010.	g VLE 2009-2010.					



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Port Alley Out
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	A/	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poog	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	рооб	Non- friable	(concealed)	7	Photograph not available.



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Port Alley Out
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Resilient sheet flooring over	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
	asbestos tile and/or	Deck screed contains	Unknown	Non-	۵	2	
	deck screed.	asbestos based on		friable			
		sample results:					
		• 16579-1 to 3 Deck					
		screed and brown					
		insulation (NWest)					
		collected by PEC					
		Floor tiles, if present,	Unknown	Non-	۵		
		presumed to contain	(conceale	friable			
		asbestos based on	O				
		sample results:					
		• 32927-1 Floor Tile					
		(Tan) NWest					
		Collected by PEC					
Commonte	N/A						



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 2 Poop Deck	Deck					Pc	Port Alley to Crew's Lounge
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	3
	Asbestos containing marine panels	Marine panels contain asbestos based on sample results: collected by PEC	Good	Non- friable	A	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	Good	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	0000	Non- friable	(concealed)	7	
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on	Unknown	Non- friable	۵	7	

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Deck 2 Poop Deck	Deck						Port Alley to Crew's Lounge
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		sample results: 16579-1 to 3 Deck screed and brown insulation (NWest) collected by PEC					
		Floor tiles, if present, presumed to contain	Unknown (conceale	Non- friable	۵	7	
		 sample results: 32927-1 Floor Tile (Tan) NWest Collected by PEC 	5				
Other	Caulking (white).	May contain asbestos	goog	Non- friable	⋖	7	
Comments	N/N						



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Two Passengers (P12)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	Good	Non- friable	4	7	1
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	Good	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non- friable	(concealed)	7	Photograph not available.
Deck	Carpet over asbestos tile and/or	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown	Unknown	Non- friable	۵	7	



SEE GENERAL NOTES

CCGS Bartlett **Asbestos Condition Report**

Two Passengers (P12) Photograph Recommended Action Accessibility ۵ Friability friable Non-Condition (conceale d) Unknown Liner under window removed during VLE 2009-2010. insulation (NWest) 32927-1 Floor Tile **Asbestos Content** Collected by PEC Floor tiles, if present, collected by PEC presumed to contain asbestos based on (Tan) NWest sample results: Material Deck 2 Poop Deck Comments Inspection Zone

000301

SECONDARIAL NOTES

Fan Room (P10)	raph				
Fan	Photograph		70		
	Recommended Action	N/A	N/A	N/A	7
	Accessibility	N/A	N/A	N/A	4
	Friability	N/A	N/A	N/A	Non- friable
	Condition	N/A	N/A	N/A	Good
	Asbestos Content	No suspect asbestos.	No suspect asbestos.	No suspect asbestos.	Pipe elbows and fittings contain asbestos based on sample results: collected by PHH
Jeck	Material	Painted metal.	Painted metal.	Pipe runs: Textile wrap over fibrous insulation (Fibreglass-type).	Cementitious elbows and fittings.
Deck z Poop Deck	Inspection Zone	Deckhead	Bulkhead	Lagging	



SEE GENERAL NOTES

Inspection Material Asbestos Content Condition Friability Accessibility Recommended Action Photograph Deck Painted metal. No suspect asbestos. N/A N/A N/A N/A	Deck 2 Poop Deck	Deck						Fan Room (P10)
Painted metal. No suspect asbestos. N/A N/A N/A	Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility		Photograph
	Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Supply Officer (P6)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos containing marine panels (except under window)	Marine panels contain asbestos based on sample results: • collected by PEC	poog	Non- friable	⋖		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	Good	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	poog	Non- friable	(concealed)	7	Photograph not available.



SEE GENERAL NOTES

Inspection Zone Deck Carpet over asbestos tile and/or deck screed.							(c.) issuing Aidding
	ırial	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
deck screed	r le and/or	Carpet – no suspect asbestos.	N/A	∀	N/A	N/A	
	- i	Deck screed contains	Unknown	Non-	۵	7	
		asbestos based on		friable			
		sample results:					
		 16579-1 to 3 Deck 					
		screed and brown					
		insulation (NWest)					.
		 collected by PEC 					
		Floor tiles, if present,	Unknown	Non-	٥	4	
		presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		 Collected by PEC 					
Comments N/A		Absonomentation of the Contract of the Contrac					



SEE GENERAL NOTES

CCGS Bartlett **Asbestos Condition Report**

Deck 2 Poop Deck	Deck						Ship's Office Logistics (P2)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos containing marine panels (except under window).	Marine panels contain asbestos based on sample results:	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poog	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: collected by PEC	Good	Non- friable	(concealed)	7	
Deck	Carpet over asbestos tile and/or	Carpet – no suspect asbestos.	N/A	ĕ	N/A	N N	
	deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck	Unknown	Non- friable	۵	7	
		screed and brown insulation (NWest) collected by PEC					

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SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Ship's Office Logistics (P2)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest • Collected by PEC	Unknown (concealed)	Non- friable	Q	7	
Other	Window mastic (Black).	May contain asbestos	900g	Non- friable	۷	7	
Comments	Liner under window r	Liner under window removed during VLE 2009-2010.	110.				



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Officer's Washroom (P4)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos containing marine panels (except under window).	Marine panels contain asbestos based on sample results:	poog	Non- friable	A	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	роод	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: collected by PEC	Good	Non- friable	(concealed)	7	
Deck	Carpet over asbestos tile and/or	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non- friable	۵	7	



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck						Officer's Washroom (P4)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Friability Accessibility	Recommended Action	Photograph
		Floor tiles, if present, presumed to contain asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest • Collected by PEC	Unknown Non- (concealed) friable	Non- friable	Q	7	
Comments	N/A						

SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 2 Poop Deck	Deck					Athwarts	Athwartship Alleyway (5) by Stairs
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	poog	Non- friable	4	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: collected by PHH collected by PEC	Good	Friable	(concealed)	7	oldelione son december 400
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: collected by PEC	poog	Non- friable	(concealed)	7	riotographi not avallable.
Deck	Resilient sheet flooring over asbestos tile and/or deck screed.	Resilient sheet flooring no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results:	Unknown	Non- friable	٩	7	



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SEE GENERAL NOTES

Deck 2 Poop Deck	Deck					Athwarts	Athwartship Alleyway (5) by Stairs
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		• 16579-1 to 3 Deck					
		insulation (NWest)					
		collected by PEC					
		Floor tiles, if present,	Unknown	Non-	۵	2	
		presumed to contain	(concealed) friable	friable	,		
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		 Collected by PEC 					
Comments	N/A						

SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 2 Poop Deck	Deck				Forw	ard Stairs from f	Forward Stairs from Poop Deck to Upper Deck
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Resilient sheet flooring and stair treads over asbestos tile and/or deck screed.	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non- friable	۵	7	
		Floor tiles, if present, presumed to contain	Unknown (concealed)	Non- friable	۵	2	



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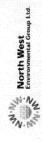
Canadian Coast Guard July 2017

SEE GENERAL NOTES

Deck 2 Poop Deck	Deck				Forwa	ırd Stairs from I	Forward Stairs from Poop Deck to Upper Deck
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest • Collected by PEC					
Comments	N/A						

SEE GENERAL NOTES

Deck 2 Poop Deck	Deck				Aft Vent to	Auxiliary Engine	Aft Vent to Auxiliary Engine Room – Exterior Gaskets
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	N/A	No suspect asbestos.	N/A	N/A	∀ №	₩ KN	N/A
Bulkhead	N/A	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Lagging	N/A	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Deck	N/A	No suspect asbestos.	N/A	N/A	N/A	N/A	N/A
Other	Ductwork gaskets (various colours).	Gaskets contain asbestos based on sample results: • 10410-22 Auxiliary Machine Space (collected by PEC, March 19, 2010)	Unknown	Non- friable	۵	7	0 0 0
Comments	All gaskets throughou	All gaskets throughout the vessel are assumed to contain asbestos unless determined otherwise by analytical testing.	contain asbes	itos unless de	termined other	wise by analytical te	sting.



SEE GENERAL NOTES

Deck 2 Poop Deck	Deck					Aft Fire	Aft Fire Equipment Compartment
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	 	
	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



SECENERAL NOTES

Deck 2 Poop Deck	Deck						Exterior Foc'sle Deck
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Anti-skid coating.	May contain asbestos in original coatings beneath newer non- asbestos coatings	poog	Non- friable	۷	7	
Other	Windlass brake bands (brown).*	No suspect asbestos	Good	Non- friable	٨	7	
Comments	* Asbestos break band	* Asbestos break bands were replaced with non-asbestos bands in June 2015, as per Client and United Engineering document.	-asbestos banc	ls in June 201	5, as per Client i	and United Enginee	ring document.



SEE GENERAL NOTES

Metal du iles ove ibrous i	Material Metal deckhead tiles over foil-faced fibrous insulation	Asbestos Content No suspect asbestos.	Condition N/A	Friability N/A	Accessibility N/A	Recommended Action N/A	Photograph
(Fibreglass-type) Non-asbestos marine panel.	(Fibreglass-type). Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Asbesto	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	рооо	Non- friable	۷	7	
Post refit: Not observed.	it: Not d.	N/A	N/A	N/A	N/A	N/A	N/A



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SEE GENERAL NOTES

Inspection							Senior Engineer (U17)
Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile and/or deck screed.	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
		Deck screed contains	Unknown	Non-	۵	7	
		asbestos based on		friable			
		sample results:					
		• 16579-1 to 3 Deck					
		screed and brown					
		insulation (NWest)					
		 collected by PEC 					
		Floor tiles, if present,	Unknown	Non-	۵	7	
		presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		• 32927-1 Floor Tile			-		
		(Tan) NWest					
		Collected by PEC					
Comments	Forward Bulkhead: As	Forward Bulkhead: Asbestos containing marine panel removed (May 2016), non-asbestos insulation and 'Norac" joiner panel supplied by	anel removed	(May 2016),	non-asbestos in	sulation and 'Norac	" joiner panel supplied by
	ProNautic Ship Interiors.	ors.					



SEE GENERAL NOTES

ū a							
Non-asbestos marine panels over foil-faced fibrous insulation. Non-asbestos marine panel. Asbestos Marinite panels. Textile wrap over fibrous insulation	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph	_
Mon-asbestos marine panel. Asbestos Marinite panels. Textile wrap over fibrous insulation	No suspect asbestos.	N/A	N/A	N/A	N/A	1	A!
Asbestos Marinite panels. Textile wrap over fibrous insulation	No suspect asbestos.	N/A	N/A	N/A	N/A	•	
Textile wrap over fibrous insulation	Marinite panels contain asbestos based on sample results: collected by PHH	Poog 9	Non- friable	4			
(Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A		19



SE GENERAL NOTES

Deck 1 Upper Deck	r Deck					Senior Eng	Senior Engineer's Washroom (U-19)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Epoxy over asbestos tile and/or deck screed.	Epoxy (Rada) is non- ACM as per manufacturer.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on	Unknown	Non- friable	۵		
		sample results: • 16579-1 to 3 Deck					
		screed and brown insulation (NWest)					
		collected by PEC					
		Floor tiles, if present,	Unknown	Non-	٥	7	
		presumed to contain	(concealed)	friable			
		sample results:					
	-	• 32927-1 Floor Tile					
		(Tan) NWest					
		 Collected by PEC 					
Comments	N/A						



SEE GENERAL NOTES

Aft Crew's Washroom and Closet	Photograph	1	
/'s Washro		1	n t.
Aft Crev	Recommended Action	N/A	N/A
	Accessibility	N/A	N/A
	Friability	N/A	N/A
	Condition	N/A	N/A
	Asbestos Content	No suspect asbestos.	No suspect asbestos.
Deck	Material	Non-asbestos marine panels over fibrous insulation.	Non-asbestos marine panel.
Deck 1 Upper Deck	Inspection Zone	Deckhead	Bulkhead



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 1 Upper Deck	r Deck					Aft Crev	Aft Crew's Washroom and Closet
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Lagging	Textile over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Deck	Epoxy over asbestos tile and/or deck screed.	Epoxy (Rada) is non- ACM as per manufacturer.	N/A	N/A	N/A	N/A	
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non- friable	۵	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results: 32927-1 Floor Tile (Tan) NWest	Unknown (concealed)	Non- friable	۵	7	



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SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck					Aft Crev	Aft Crew's Washroom and Closet
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		Collected by PEC					
Comments N/A	N/A						



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 1 Upper Deck	r Deck						Second Engineer (U23)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	poog	Non- friable	⋖		
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: collected by PEC	900g	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	рооб	Non- friable	C (concealed)	7	



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SEC GENERAL NOTES

Inspection Zone Deck asbe	Material						
		Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
qec	Carpet over asbestos tile and/or	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	deck screed.	Deck screed contains asbestos based on	Unknown	Non- friable	۵	7	
		sample results:					
		• 16579-1 to 3					
		Deck screed					
		and brown					
		insulation					
		(Issam)					
		collected by collected by					
		Floor tiles, if present,	Unknown	Non-		2	
		presumed to contain	(concealed)	friable			
		asbestos based on	Yes .				
		sample results:					
		 32927-1 Floor Tile 					
		(Tan) NWest					
		 Collected by PEC 					



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 1 Upper Deck	r Deck						Third Engineer (U27)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	poog	Non- friable	4	7	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	A/N	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	Poop	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	рооб	Non- friable	(concealed)	7	Photograph not available.
Deck	Carpet over asbestos tile and/or	Carpet – no suspect asbestos.	N/A	A/N	N/A	N/A	
	deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non- friable	۵	7	



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SEE GENERAL NOTES

Deck 1 Upper Deck	Deck						Third Engineer (U27)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		 collected by PEC 					Accession .
		Floor tiles, if present,	Unknown	Non-	D	7	
		presumed to contain	(concealed) friable	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest	-				
		 Collected by PEC 					
Comments	VLE 2009 – 2010: Ren	VLE 2009 – 2010: Removal of deck steel plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent	ım outboard bı	ulkhead to ap	proximately 6' ir	nboard. Unable to v	verify extent.

SHE GENERAL NOTES

Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	роо9	Non- friable	¥	7	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	A/N	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: collected by PHH collected by PEC	poog	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non- friable	(concealed)	7	
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	and/or deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non- friable	۵	7	



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CCGS Bartlett
Asbestos Condition Report

Deck 1 Upper Deck	Deck						Two Oilers (U29)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		Floor tiles, if present,	Unknown	Non-	D	7	
		presumed to contain	(concealed) friable	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		Collected by PEC					
Comments	VLE 2009 – 2010: Re	VLE 2009 - 2010: Removal of deck steel plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.	m outboard bu	ulkhead to app	oroximately 6' ir	board. Unable to	erify extent.

000329

SEE GENERAL NOTES

Deck & Opper Deck	300						IWO Passengers (USL)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: collected by PHH	poog	Non- friable	⋖	7	1 1/2
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	Good	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Pood 9	Non- friable	(concealed)	7	Photograph not available.



SEGENERAL NOTES

Deck 1 Upper Deck	II DECR						I wo Passengers (U31)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	A/N	A/M	N/A	N/A	
	and/or deck screed.	Deck screed contains asbestos based on	Unknown	Non- friable	۵		
		sample results:					
		• 16579-1 to 3	***************************************				
		Deck screed					
		insulation					
		(NWest)					
		collected by					
		PEC					
		Floor tiles, if present,	Unknown	Non-	0	7	
		presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		Collected by PEC					



SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Cook and Steward (U33)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	Good	Non- friable	A	7	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	Pood	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	poog	Non- friable	(concealed)	7	Photograph not available.
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	N/A	A/N	N/A	
	and/or deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck	Unknown	Non- friable	Q	2	



SEE GENERAL NOTES

Deck 1 Upper Deck	. Deck	A CALLED TO THE					Cook and Steward (U33)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		screed and brown insulation (NWest)					
		 collected by PEC 					
		Floor tiles, if present,	Unknown	Non-	Q	7	
		presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		Collected by PEC					
Comments	VLE 2009 - 2010: Re	VLE 2009 - 2010: Removal of deck steel plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.	om outboard be	ulkhead to ap	proximately 6' i	nboard. Unable to	rerify extent.



SEE GENERAL NOTES

Inspection Zone Deckhead M							
	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
<u> </u>	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead Mm	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	A/N	N/A	
₹ 3 <u>g</u>	Asbestos containing marine panels	Marine panels contain asbestos based on sample results:	poog	Non- friable	4	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	p009	Friable	(concealed)	2	
~	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	P009	Non- friable	(concealed)	7	Photograph not available.



SEE GENERAL NOTES

Inspection Zone							
	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	∀ /№	N/A	N/A	
	and/or deck	Deck screed contains	Unknown	Non-	۵	2	
	screed.	asbestos based on sample results:		friable			
		• 16579-1 to 3 Deck					
		screed and brown					
		insulation (NWest)					
		 collected by PEC 					
		Floor tiles, if present,	Unknown	Non-	۵	7	
		presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor Tile					
		(Tan) NWest					
		Collected by PEC					



SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Laundry Room (U39)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	Pooo9	Non- friable	4	7	
Lagging	Asbestos containing pipe insulation.	Pipe insulation and fittings contain asbestos based on sample results: collected by PHH	poog	Friable	4	7	
	Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Deck	Epoxy over deck screed	Epoxy may contain asbestos.	Good	Non- friable	A	2	



SEC GENERAL NOTES

Deck 1 Upper Deck	. Deck						Laundry Room (U39)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Friability Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non- friable	Q		Page 1997
Comments	N/A						



SEE GENERAL NOTES

Deck 1 Upper Deck	· Deck					Ste	Steering Gear Compartment
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	N.
Lagging	Armaflex insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	High temperature jacketing and metal mesh over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	



SECENERAL NOTES

Deck 1 Upper Deck	r Deck					Ste	Steering Gear Compartment
Inspection Zone	Material	Asbestos Content	Condition		Friability Accessibility	Recommended Action	Photograph
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						

SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Loan Clothing / Stores
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	13
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Armaflex	No suspect asbestos.	N/A	N/A	N/A	N/A	
Deck	Painted deck screed over thermobestos block insulation.	Deck screed and block insulation contain asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Deck screed: Good Block insulation: debris (if exposed)	Deck screed: Non- friable Block insulation:	Deck screed: A Block insulation: D		
Comments	N/A						



SE GENERAL NOTES

Deck 1 Upper Deck	. Deck						Cold Storage
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Armaflex insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	Liners removed during VLE 2009 – 2010.	ng VLE 2009 – 2010.					



SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Cool Storage
Inspection Zone	Material	Asbestos Content	Conditio	Friabilit y	Accessibility	Recommended	Photograph
Deckhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	A/N	N/A	N/A	
Lagging	Armaflex insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A				***************************************		



SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Two Seaman (U38)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommende d Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass- type).	No suspect asbestos.	N/A	N/A	N/A	A/N	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	рооб	Non- friable	⋖	7	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Post Refit: Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	A/N	N/A	N/A	
	and/or deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non- friable	۵	2	
		Floor tiles, if present, presumed to contain	Unknown (concealed)	Non- friable	۵	7	



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Asbestos Condition Report

Deck 1 Upper Deck	r Deck						Two Seaman (U38)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommende d Action	Photograph
		asbestos based on sample results: • 32927-1 Floor Tile (Tan) NWest					
Comments	N/A						

000344

SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck					Auxiliar	Auxiliary Machinery Space Escape
Inspection	Material	Asbestos Content	Condition	Friability	Accessibility	Recommende d Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments	N/A						



SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Engine Room Escape (U-18)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommende d Action	Photograph
Deckhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Comments	N/A	***************************************		***************************************		-	



SHE GENERAL NOTES

Deck 1 Upper Deck	r Deck				S	tarboard Forwa	Starboard Forward Crew's Washroom (U-21)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommende d Action	Photograph
Deckhead	Non-asbestos marine panels over foil-faced fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	рооб	Non- friable	⋖		
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: • collected by PHH • collected by PEC	poog	Friable	C (concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non- friable	C (concealed)		
Deck	Epoxy over deck screed.	Epoxy (Rada) is non-ACM as per manufacturer.	N/A	N/A	N/A	N/A	



SEE GENERAL NOTES

CCGS Bartlett

Asbestos Condition Report

Deck 1 Upper Deck	r Deck					tarboard Forward	Starboard Forward Crew's Washroom (U-21)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Friability Accessibility	Recommende d Action	Photograph
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non- friable	Q	Action 7 Monitor in place with routine surveillance	
Comments	N/A						



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 1 Upper Deck	Deck					Port Forward Crev	Port Forward Crew's Washroom (U-20)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panels over foil-faced fibrous insulation.	No suspect asbestos.	N/A	۸/۸	N/A	N/A	Photograph not available
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	poog	Non- friable	∢	7	Photograph not available
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: collected by PHH collected by PEC	Good	Friable	(concealed)	7	-
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	Good	Non- friable	(concealed)	7	Photograph not available.
Deck	Epoxy over possible deck screed.	Epoxy (Rada) is non- ACM as per manufacturer.	N/A	N/A	N/A	N/A	



000349

SEE GENERAL NOTES

	Deck 1 Upper Deck					FOR FORWAL	Port Forward Crew's Washroom (U-20)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non- friable	Q		



SHE GENERAL NOTES

Deck 1 Upper Deck	r Deck					Linen	Linen Locker between U26 and U30
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	poog	Non- friable	۷	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	goog	Friable	C (concealed)	7	Dhotograph not available
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non- friable	(concealed)	7	
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/N						



SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Two Seaman (U36)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	and/or deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non- friable	۵	7	
		Floor tiles, if present, presumed to contain asbestos based on sample results:	Unknown (conceale d)	Non- friable	Q	7	



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SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Two Seaman (U36)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		• 32927-1 Floor Tile				· ·	
		Collected by PEC					
Comments	VLE 2009 2010: I	Comments VLE 2009 ~ 2010: Removal of deck steel plate from outboard bulkhead to approximately 6' inboard. Unable to verify extent.	e from outbo	ard bulkhead	to approximate	ly 6' inboard. Unable	to verify extent.

SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck						Two Passengers (U32)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	poog	Non- friable	4	7	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	роод	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: collected by PEC	good	Non- friable	(concealed)	7	



SH GENERAL NOTES

Deck 1 Upper Deck	r Deck						Two Passengers (U32)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Friability Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	A'N	N/A	N/A	N/A	
	and/or deck	Deck screed contains	Unknown	Non-	O	_	
	screed.	asbestos based on		friable			
		sample results: • 16579-1 to 3					
		Deck screed and					
		brown insulation					
		(NWest)					
		 collected by PEC 					
		Floor tiles, if present,	Unknown	Non-	Q		
		presumed to contain	(concealed)	friable			
		asbestos based on					
		sample results:					
		32927-1 Floor					
		Tile (Tan) NWest					
		 Collected by PEC 					
Comments	N/A						

SEE GENERAL NOTES

Deck 1 Upper Deck	r Deck					Linen Lo	Linen Locker in Aft Athwartship Alley
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Wood over possible fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Maranite panels	Marine panels contain asbestos based on sample results:	poog	Non-friable	٨		
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Deck screed over thermobestos block insulation	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Deck screed: Good Block insulation: debris (if exposed)	Deck screed: Non-friable Block insulation: Friable	Deck screed: A lock insulation: D		
Comments	N/A						Section of the sectio



SEE GENERAL NOTES

•							•
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	роод	Non-friable	⋖	7	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	роод	Friable	(concealed)		
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	роод	Non-friable	(concealed)	7	



SEE GENERAL NOTES

חברא ד מחחבו חברא	er Deck						I wo seamen (U3U)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	N/A	A/N	N/A	
	and/or deck	Deck screed	Unknown	Non-friable	۵		
	screed.	contains asbestos					
		based on sample					
		results:					
		• 16579-1 to 3					
		Deck screed					
		and brown					
		insulation					
		(NWest)			************		
		collected by					
		PEC					
		Floor tiles, if	Unknown	Non-friable	۵	7	
		present, presumed	(concealed)				
		to contain asbestos					
		based on sample					
		results:					
		• 32927-1 Floor					
		Tile (Tan)					
		NWest					
		Collected by					
		PEC					



SEE GENERAL NOTES

Two Passengers (U26)/ Leading Seaman	ended on					Photograph not available.
	Recommended Action	N/A	_	N/A	_	7
	Accessibility	N/A	∢	N/A	(concealed)	(concealed)
	Friability	N/A	Non-friable	N/A	Friable	Non-friable
	Condition	N/A	Good	N/A	Pood	Poog
	Asbestos Content	No suspect asbestos.	Marinite panels contain asbestos based on sample results: collected by	No suspect asbestos.	Pipe lagging contains asbestos based on sample results:	PEC Red duct mastic contains asbestos based on sample results: • collected by PEC
Deck	Material	Non-asbestos marine panel over foil-face fibrous insulation.	Asbestos Marinite panels.	Non-asbestos marine panel.	Pipe lagging.	Red duct mastic.
Deck 1 Upper Deck	Inspection Zone	Deckhead	Bulkhead		Lagging	



SEC GENERAL NOTES

CCGS Bartlett

Asbestos Condition Report

Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	and/or deck	Deck screed	Unknown	Non-friable	٥	7	
		based on sample					
		results:					
		• 16579-1 to 3					
		Deck screed					
		and brown					
		insulation					
		(NWest)					
		• collected by					
		PEC					
		Floor tiles, if	Unknown	Non-friable	٥	2	
		present, presumed	(concealed)				
		to contain asbestos					
		based on sample					
		results:					
		32927-1 Floor					
		Tile (Tan)					
		NWest					
		Collected by					
		<u> </u>					



SEE GENERAL NOTES

Deck 1 Uppe	Upper Deck						Two Leading Seaman (U-22)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	poog	Non-friable	⋖	7	
	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	A/N	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poog	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	Good	Non-friable	(concealed)	7	N/A



SEE GENERAL NOTES

Inspection Ma Zone Deck Carpet asbesto and/or screed.	Material						
		Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
scree	Carpet over asbestos tile	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	and/or deck	Deck screed	Unknown	Non-friable	0		
	į	based on sample					
		results:					
		Deck screed					
		and brown					
		insulation					
		• collected hy					
		PEC					
		Floor tiles, if	Unknown	Non-friable	٥		
		present, presumed	(concealed)				
		asbestos based on					
		sample results:					
		32927-1 Floor					
		Tile (Tan)					
		NWest					
		Collected by			: .		
		PEC					



SEE GENERAL NOTES

Deck 1 Upp	Upper Deck						Sick Bay (U16)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panels over foil-faced fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poog	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non-friable	(concealed)	7	
Deck	Epoxy over Deck screed and Thermobestos block insulation	Epoxy may contain asbestos. Deck screed contains asbestos based on sample results:	Good Debris (if exposed)	Non-friable Non-friable	A D	7 7	



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Deck 1 Upper Deck	er Deck						Sick Bay (U16)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
		• 16579-1 to 3					
		Deck screed					
	-	and brown					
		insulation					
		(NWest)					
		 collected by 					
		PEC					
		Thermobestos	Debris (if	Friable	٥	7	
		block insulation	(pasodxa				
		contains asbestos		**			
		based on sample					
	-	results:					
		 collected by 					
		NWest (16579-					
		3).					
Comments	Liners removed d	Liners removed during VLE 2009-2010.					
	VLE 2009-2010: R	VLE 2009-2010: Removal of deck steal plate from outboard bulk head to approximately 6' inboard. Unable to verify extent.	ate from outbo	ard bulk head	o approximatel	y 6' inboard. Unable	to verify extent.



SEE GENERAL NOTES

Deck 1 Upper Deck	er Deck						Starboard Alleyway
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results:	D000	Non-friable	⋖	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poo5	Friable	(concealed)		Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Good	Non-friable	(concealed)	7	



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SE GENERAL NOTES

Deck Resilient sheet Resilient sheet N/A N/A N/A N/A Action	Deck 1 Upp	Upper Deck						Starboard Alleyway
Resilient sheet flooring – no asbestos and/or deck creed and sare themobestos themobestos themobestos based on sample block insulation. • 16579-1 to 3 • 1679-1 to 3 • 1679	Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC Floor tiles, if to contain asbestos based on sample results: • 3297-1 Floor Tile (Tan) NWest • Collected by PEC Floor tiles, if to contain asbestos based on sample results: • 3297-1 Floor Tile (Tan) NWest • Collected by PEC Thermobestos Debris (if Friable D D Deck screed and brown insulation exposed) Contains asbestos based on sample results: collected by NWest results: collected by NWest	Deck	Resilient sheet flooring over asbestos tile	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	ener etter sig men filt sig men i Kelajak av men ig dig ett stad sig men ste sig men ste sig men ste sig men i
16579-1 to 3 Deck screed and brown insulation (Nwest) collected by PEC Floor tiles, if Unknown Non-friable D present, presumed (concealed) to contain asbestos based on sample results:		and/or deck screed and thermobestos	Deck screed contains asbestos based on sample	Unknown	Non-friable	۵		
Unknown Non-friable D (concealed) Debris (if Friable D exposed)		block insulation.	• 16579-1 to 3					
Unknown Non-friable D (concealed) Debris (if Friable D exposed)			Deck Screed and brown insulation (NW/set)					
Unknown Non-friable D (concealed) Debris (if Friable D exposed)								
(concealed) Debris (if Friable D exposed)			Floor tiles, if	Unknown	Non-friable		7	
Debris (if Friable D exposed)			present, presumed to contain asbestos	(concealed)		3		
Debris (if Friable D exposed)			results:					
Debris (if Friable D exposed)			32927-1 Floor Tile (Tan) NWest					
Debris (if Friable D exposed)			Collected by PEC					
			Thermobestos block insulation	Debris (if exposed)	Friable	٥	Action 7 Monitor in place with	
sst			contains asbestos based on sample				routine surveillance	
(16570-3)			results:					
Company of the compan			(16579-3).					



SEE GENERAL NOTES

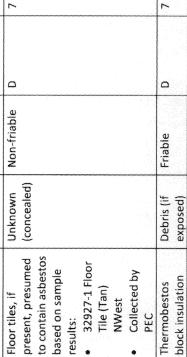
Deckhead tile tile ins	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead No	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	
A S	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	poog	Non-friable	d	7	
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	poog	Friable	(concealed)	7	



SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Aft Athwartship Alleyway Photograph Recommended Action A/N Accessibility (concealed) Y/N ۵ Non-friable Non-friable Friability A/N Condition Unknown Good N/A **Asbestos Content** contains asbestos contains asbestos based on sample based on sample 16579-1 to 3 suspect asbestos Red duct mastic collected by Deck screed collected by and brown Resilient sheet insulation flooring - no Deck screed (NWest) PEC results: results: Red duct mastic. block insulation. Resilient sheet thermobestos Material flooring over asbestos tile and/or deck screed and Deck 1 Upper Deck Inspection Zone Deck





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Asbestos Condition Report CCGS Bartlett

Deck 1 Upper Deck	er Deck						Aft Athwartship Alleyway
Inspection Zone	Material	Asbestos Content	Content Condition	Friability	Friability Accessibility	Recommended Action	Photograph
		contains asbestos				TO THE PARTY OF TH	
		based on sample					
		results:					
		collected by NWest					
		(16579-3).					
Comments	N/A						

000369

SEE GENERAL NOTES

Material Asbestos Content Metal deckhead tiles over fibrous asbestos. insulation (Fibreglass-type). Ron-asbestos Mo suspect asbestos. Asbestos Marinite panels based on sample results: • collected by PHH	Content Condition N/A				
		Friability	Accessibility	Recommended Action	Photograph
		N/A	N/A	N/A	
	N/A	N/A	N/A	N/A	
	anels Good sestos ample ed by	Non-friable	⋖	7	



SEE GENERAL NOTES

Deck 1 Up	Upper Deck						Port Alleyway
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	роод	Friable	(concealed)		Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non-friable	(concealed)	7	
Deck	Resilient sheet flooring over asbestos tile	Resilient sheet flooring – no suspect asbestos	A/N	N/A	N/A	N/A	
	and/or deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest)	Unknown	Non-friable	۵	7	
		collected by PEC Floor tiles, if present, presumed to contain asbestos	Unknown (concealed)	Non-friable	Q	7	



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Deck 1 Upper Deck	er Deck						Port Alleyway
Inspection Zone	Material	Asbestos Content	S Content Condition	Friability	Accessibility	Recommended Action	Photograph
		based on sample					
		results:					
		32927-1 Floor					
		Tile (Tan)					
		NWest					
		Collected by					
		PEC					
Comments	Penetrations in marine panel.	ırine panel.					

SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 1 Upper Deck	er Deck						Cleaning Locker
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.
Bulkhead	Asbestos containing marine panels	Marine panels contain asbestos based on sample results: • collected by PEC	Good	Non- friable	Access A	7	Photograph not available.
Lagging	Not observed.	N/A	٧/٧	N/A	N/A	N/A	N/A
Deck	Deck Screed	May contain asbestos	Poog	Non- friable	٨	7	Photograph not available.
Comments	No access in 2017.						

000373

SEE GENERAL NOTES

CCGS Bartlett Asbestos Condition Report

Deck 1 Upp	Upper Deck				Aft Stairs	Aft Stairs from Poop Deck to Upper Deck	to Upper Deck
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Non-asbestos marine panel.	No suspect asbestos.	N/A	N/A	N/A	N/A	44
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results:	роод	Friable	(concealed)	7	Photograph not available.
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	Poog	Non- friable	(concealed)	7	
Deck	Resilient sheet flooring over	Resilient sheet flooring – no suspect asbestos	N/A	N/A	N/A	N/A	
	asbestos tile and/or deck screed.	Deck screed contains asbestos based on sample results: • 16579-1 to 3 Deck screed and brown insulation (NWest) • collected by PEC	Unknown	Non- friable	۵	7	



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Asbestos Condition Report CCGS Bartlett

Deck 1 Upper Deck	er Deck				Aft Stairs	Aft Stairs from Poop Deck to Upper Deck	to Upper Deck
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
		Floor tiles, if present,	Unknown	Non-	Q	7	
		presumed to contain	(concealed	friable			
		asbestos based on sample	_				
		results:					
		 32927-1 Floor Tile 					
		(Tan) NWest					
		 Collected by PEC 					
	Stair treads.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments N/A	N/A						

000375

SEE GENERAL NOTES

	W 554						Winchman (U14)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Asbestos Marinite panels.	Marinite panels contain asbestos based on sample results: • collected by PHH	Good	Non- friable	⋖	7	
	Non-asbestos marine panel.						T



SEE GENERAL NOTES

Deck 1 Upper Deck	er Deck						(++)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Lagging	Pipe lagging.	Pipe lagging contains asbestos based on sample results: collected by PHH collected by PEC	Good	Friable	(concealed)	7	
	Red duct mastic.	Red duct mastic contains asbestos based on sample results: • collected by PEC	poog	Non- friable	(concealed)	7	
Deck	Carpet over asbestos tile and/or	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	deck screed.	Deck screed contains	Unknown	Non- friable	۵	7	
		results:) 2 2 3 3 3 3			
		• 16579-1 to 3 Deck					
		screed and brown insulation (NWest)					
		 collected by PEC 					
		Floor tiles, if present,	Unknown	Non-	۵	2	
		presumed to contain asbestos based on sample	(conceale d)	triable			
		results:					
		• 32927-1 Floor Tile					
		(Tan) NWest Collected by PFC					
Comments	Formerly Senior Bosun.						



SEE GENERAL NOTES

Bosun (U15)	£			
Bo	Photograph			
	Recommended Action	N/A	N/A	7
	Accessibility	N/A	N/A	(concealed)
	Friability	N/A	A/A	Friable
	Condition	N/A	N/A	Good
	Asbestos Content	No suspect asbestos.	No suspect asbestos.	Pipe lagging contains asbestos based on sample results:
er Deck	Material	Metal deckhead tiles over fibrous insulation (Fibreglass-type).	Non-asbestos marine panel.	Pipe lagging.
Deck 1 Upper Deck	Inspection Zone	Deckhead	Bulkhead	Lagging



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SEE GENERAL NOTES

Deck 1 Upper Deck	oer Deck						Bosun (U15)
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Red duct mastic.	Red duct mastic contains asbestos based on sample results:	p005	Non- friable	(concealed)	7	
Deck	Carpet over asbestos tile and/or	Carpet – no suspect asbestos.	N/A	N/A	N/A	N/A	
	deck screed.	Deck screed contains asbestos based on	Unknown	Non- friable	۵		
		sample results:					
		screed and brown					V
		insulation (NWest)					
		 collected by PEC 					
		Floor tiles, if present,	Unknown	Non-	۵		
		presumed to contain	(concealed)	friable			
		sample results:					
		• 32927-1 Floor Tile					
		(Tan) NWest					
		Collected by PEC					
Comments	Formally Chief Cook						



SECENERAL NOTES

Deck 1 Up	Upper Deck						Bosun's Stores
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	A/N	V/V	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



SHE GENERAL NOTES

מברע ד	Oppel Deun						SCR Drive Room
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	15" Return: Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results:	Good-Fair	Friable	4	Good: 7Fair: 5/6	
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	



SEE GENERAL NOTES

ᆿ	Deck 1 Upper Deck						SCR Drive Room
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



SHE GENERAL NOTES

					Recommended	
Material	Asbestos Content	Condition	Friability	Accessibility	Action	Photograph
Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Outboard, by way of generator, and 15" return: Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	V/V	N/A	
Painted metal.	No suspect asbestos.	A/A	N/A	N/A	N/A	
Pipe lagging	Pipe lagging contains asbestos based on sample results:	Good-Fair	Friable	⋖	Good: 7Fair: 5/6	
Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	V / Z	N/A	



SEE GENERAL NOTES

Inspection Zone Material Asbestos Content Asbestos Content Condition Friability Accessibility	Deck 1 Upper Deck	per Deck						Foc'sle and Foc'sle Head
Anti-skid paint on Anti-skid may contain Good metal. asbestos in original coatings beneath newer non-asbestos coatings.	Inspection Zone	Material	Asbestos Content	Condition		Accessibility	Recommended Action	Photograph
	Deck	Anti-skid paint on metal.	Anti-skid may contain asbestos in original coatings beneath newer non-asbestos coatings.	Good	Non- friable	A		



SEE GENERAL NOTES

Deck 1 Up	Upper Deck						Paint Locker
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



July 2017

SEE GENERAL NOTES

Deck 1 Upper Deck	oer Deck						Workshop
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	V/V	N/A	N/A	
	Pipe lagging	Pipe lagging contains asbestos based on sample results:	Good-Fair	Friable	٩	Good: 7Fair: 5/6	Photograph not available.



SEE GENERAL NOTES

Deck 1 Upper Deck	oer Deck						Workshop
Inspection Zone	Material	Asbestos Content	Condition	Friability	Condition Friability Accessibility	Recommended Action	Photograph
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A	***************************************	***************************************			***************************************	



SEE GENERAL NOTES

реско ваз	baseline						Engine Room
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	15" Return and a 10'x4' area: Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	A/N	
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results:	Good-Fair	Friable	⋖	Good: 7Fair: 5/6	
	Pipe insulation.	No suspect asbestos.	A .	N/A	N/A	N/A	



SEE GENERAL NOTES

Deck 0 Baseline	eline						Engine Room
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	High temperature jacket.	No suspect asbestos.	A/M	N/A	N/A	A/N	
	Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	N/N	N/A	N/A	
Deck	Checker plate metal catwalk.	No suspect asbestos.	N/A	∀N V	N/A	N/A	
Comments	N/A						



SEE GENERAL NOTES

Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	A/A	N/A	N/A	N/A	A LISON CO.
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results: collected by PHH collected by PEC	Good-Fair	Friable	A	Good: 7Fair: 5/6	



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Deck 0 Baseline	seline						Auxiliary Machine Room
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
	Textile wrap over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	Y E
	High temperature jacket.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	A/A	N/A	N/A	
Deck	Checker plate metal.	No suspect asbestos.	A/N	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	Photograph not available.
Other	Shaft break bands*	No suspect asbestos.	N/A	N/A	N/A	N/A	



SEE GENERAL NOTES

Deck 0 Baseline	eline						MCR Stores
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Fwd and Perforated metal over fibrous insulation (Fibreglass-type).	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	THE REAL PROPERTY.
Lagging	Not observed.	N/A	N/A	N/A	N/A	N/A	N/A
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



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SEE GENERAL NOTES

Deck 0 Baseline	eline						Electrician's Workshop
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	∀ /N	N/A	∀ %	
	Painted metal.	No suspect asbestos.	A/N	N/A	N/A	N/A	*
Bulkhead	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	广
Lagging	New non-asbestos pipe insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	G. C.
	Pipe lagging	Pipe lagging contains asbestos based on sample results:	Good-Fair	Friable	⋖	Good: 7Fair: 5/6	Showing location of pipe insulation removed by glove bag.
Deck	Checker plate metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Comments	N/A						



SEC GENERAL NOTES

Deck 0 Ba	Baseline						Control Room
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	A/A	
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	A STATE OF THE STATE OF T
Lagging	New non-asbestos pipe insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
	Pipe lagging	Pipe lagging contains asbestos based on sample results:	Good-Fair	Friable	⋖	Good: 7Fair: 5/6	
	Textile and plastic moulding over fibrous insulation (navy board system).	No suspect asbestos.	N/A	N/A	N/A	N/A	Showing location of pipe insulation removed by glove bag.
Deck	Painted metal.	No suspect asbestos.	A/A	N/A	N/A	N/A	
Comments	Asbestos containing pipe	Asbestos containing pipe insulation was removed by LGF Environmental on May 31 st 2012.	by LGF Enviror	mental on !	May 31" 2012.		



SEE GENERAL NOTES

Deck 0 Baseline	eline						Winch Compartment
Inspection Zone	Material	Asbestos Content	Condition	Friability	Accessibility	Recommended Action	Photograph
Deckhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Bulkhead	Perforated metal over fibrous insulation.	No suspect asbestos.	N/A	N/A	N/A	N/A	
Lagging	Pipe lagging	Pipe lagging contains asbestos based on sample results:	Good-Fair	Friable	<	Good: 7Fair: 5/6	N/A
Deck	Painted metal.	No suspect asbestos.	N/A	N/A	N/A	N/A	Ohortowa danger
Other	Winch break bands	No suspect asbestos.	N/A	N/A	N/A	ΑN	rnotograph not available.
Comments	* Asbestos break bands were	were replaced with non-a	sbestos bands	in June 2015	, as per Client ar	replaced with non-asbestos bands in June 2015, as per Client and United Engineering document.	g document.



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Appendices



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Appendix A: Evaluation of Asbestos Containing Materials (ACMs)

Evaluation of asbestos containing materials is based on the condition of the material and its accessibility. Following are the guidelines used to evaluate ACMs and the action, if any, required to safely manage them.

Spray Applied Fireproofing, Insulation and Texture Finishes

In evaluating the condition of ACM spray applied as fireproofing, thermal insulation or texture, decorative or acoustic finishes, the following criteria apply:

GOOD	Surface of material shows no significant signs of damage, deterioration or delamination. Up to one percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the assessor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.
POOR	Sprayed materials show signs of damage, delamination or deterioration. More than one percent damage to surface of ACM spray.

Mechanical Insulation

In evaluating the condition of mechanical insulation (on boilers, breeching, ductwork, piping, tanks, equipment etc.) the following criteria are used:

GOOD	Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.
FAIR	Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.
POOR	Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

Non-Friable and Potentially Friable Materials

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos Concrete products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material will be treated as a friable product.







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Accessibility

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

Access (A)	Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may results in disturbance of ACM not normally within reach from floor level.
Access (B)	Frequently entered maintenance areas within reach of maintenance staff, without need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.
Access (C) Exposed	Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.
Access (C) Concealed	Areas of the building which require removal of a building component including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces etc. Observations are limited to the extent visible from the access points.
Access (D)	Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition or the ceiling, wall or equipment etc., is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the assessor's ability to visually examine the materials in Access D.

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Action Matrix

The Action Matrix determines what, if any, action is required to safely manage ACMs:

		Сог	ndition	
Access	Good	Fair	Poor	Debris
(A)	ACTION 5/7	ACTION 5/6	ACTION 3	ACTION 1
(B)	ACTION 7	ACTION 6/5	ACTION 3	ACTION 1
(C) Exposed	ACTION 7	ACTION 6	ACTION 4	ACTION 2
(C) Concealed	ACTION 7	ACTION 7	ACTION 4	ACTION 2
(D)	ACTION 7	ACTION 7	ACTION 7	ACTION 7



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Action Table

Following is a description of the action required to manage ACMs, based on the outcome of the evaluation:

	Immediate Clean Up of Debris That is Likely to be Disturbed
Action 1	Restrict access that is likely to cause a disturbance of the ACM DEBRIS and clean up ACM DEBRIS immediately. Utilize correct asbestos procedures. This action is required for compliance with regulatory requirements.
	Entry Into Areas with ACM Debris
Action 2	At locations where ACM DEBRIS can be isolated in lieu of removal or clean up, use appropriate means to limit entry to the area. Restrict access to the area to persons utilizing Type 2 asbestos-work precautions. The precautions will be required until the ACM DEBRIS has been cleaned up, and the source of the DEBRIS has been stabilized or removed.
	ACM Removal Required for Compliance
Action 3	Remove ACM for compliance with regulatory requirements. Utilize asbestos procedures appropriate to the scope of the removal work.
	Access into Areas Where ACM is Present and Likely to be Disturbed by Access
Action 4	Use asbestos precautions when entry or access into an area likely to disturb the ACM. ACTION 4 must be used until the ACM is removed (Use ACTION 1 or 2 if DEBRIS is present).
	Proactive ACM Removal
Action 5	Remove ACM in lieu of repair, or at locations where the presence of asbestos in GOOD condition is not desirable.
	ACM Repair
Action 6	Repair ACM found in FAIR condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work, treat ACM as material in GOOD condition and implement ACTION 7. If ACM is likely to be damaged or disturbed during normal use of the area or room, implement ACTION 5.
	Routine Surveillance
Action 7	Institute routine surveillance of the ACM. Trained workers or contractors must use appropriate asbestos precaution during disturbance of the remaining ACM.



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Appendix B: Analytical Results







Unit 210 - 2950 Douglas Street Victoria, B.C. V8T 4N4

Tel: 250-384-9695 Fax: 250-384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney

Contractor: Canadian Coast Guard - Sidney

Project: Bartlett Screed sampling

Date: February 03, 2012 **Client Job or PO#:** F1782-110781

Project number: 16579

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%
16579-1	Deck 3, Loan Clothing Locker	Jan-31-2012	S	SD Other - Deck Screed	Grey cement with grey paint	100	100 None Detected	0	Cellulose (20%) Non-Fibrous (80%)	100
16579-2	Deck 3, Loan Clothing Locker	Jan-31-2012	SD	SD Other - Deck Screed	Grey cement with grey paint	100	100 None Detected	0	Cellulose (30%) Non-Fibrous (70%)	100
16579-3	Deck 3, Loan Clothing Locker, Under Deck Screed Jan-31-2012	Jan-31-2012	SD	SD Other - Insulation?	Light brown fibres	100	100 Amosite	10	Glass (85%) Non-Fibrous (5%)	06

Unit 210 - 2950 Douglas Street Victoria, B.C. V8T 4N4

Tel: 250-384-9695 Fax: 250-384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: Deck Screed Ships Office

Date: June 06, 2012

Project number: 17679

Client Job or PO#:

92 100 Other Materials Cellulose (1%) Non-Fibrous (99%) Non-Fibrous 8 0 0 Asbestos None Detected None Detected 100 9 8 Black cementitious with gold adhesive Phase Black cementitious Other - Deck Screed with Carpet Mastic Other - Deck Screed Description Analyst S S Jun-06-2012 Jun-06-2012 Date Analysed Location Ships Office Ships Office Sample No 17679-2 17679-1

000403



201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney

Contractor: Canadian Coast Guard - Sidney

Project: CCGS Bartlett Bulk Sampling

Date: July 28, 2017

Client Job or PO#: F1782-150079

Project number: 25017

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos 9,	· .	% Other Materials %	%	Comments
25017-1b	Winch Compartment - Main Derrick Winch	Apr-20-2015	LR	LR Brake Band	Black/Grey	100	100 Chrysotile	ioN O	Synthetic (25%) Non-Fibrous (65%)	06	
25017-2b	Foc'sle Deck - SB Windlass	Apr-20-2015	LR	LR Brake Band	Brown	100	100 Chrysotile	ry S S	Synthetic (25%) Non-Fibrous (65%)	90	
25017-3b	Auxillary Machinery Space - SB Propulsion Shaft	Apr-20-2015	LR	Brake Band	Brown/Gold	100	100 Chrysotile 2	Syr Nor	Synthetic (15%) Non-Fibrous (65%)	80	



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Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney

Contractor: Canadian Coast Guard - Sidney

Project: CCGS Bartlett 2015 - Asbestos Inventory Update

Date: July 28, 2017

Client Job or PO#:

Project number: 25366

Comments 100 8 Other Materials Non-Fibrous (92%) Synthetic (4%) Glass (4%) 8 0 Asbestos None Detected 100 8 Phase Green Description Brake Analyst Σ Jun-19-2015 Date Analysed Derrick Whip Winch Motor Location Sample No 25366-1b

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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000405



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Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - 1 RUSH BULK ASBESTOS

Date: July 28, 2017

Client Job or PO#:

Project number: 25637

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	% Other Materials	%	Comments
25637-1b	CCGS Bartlett	Jun-12-2015	LR	Pipe Transit	Red/Black	100	100 None Detected	0	Synthetic (10%) Non-Fibrous (90%)	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials, Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Bulk Sample Report

Client: Canadian Coast Guard - Sidney

Contractor: Canadian Coast Guard - Sidney

Project: CCGS Bartlett - Pipe Insulation Sampling

Date: July 28, 2017

Project number: 28534 Client Job or PO#:

ı												
	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	% Other Materials	%	Comments	
	Engine Room Entrance	Feb-22-2016	Ä	Penetration Insulation - Applied to Bulkhead	Light Yellow/ Grey 100 None Detected	100	None Detected	0	Mineral Fibre (99.5%) 100 Non-Fibrous (0.5%)	<u>5</u>		

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Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Sidney

Contractor: Canadian Coast Guard - Sidney

Project: CCGS Bartlett - Asbestos Inventory 2017

Date: June 09, 2017

Client Job or PO#: F1782-170008

Project number: 32927

	l					ŀ					
Sample No	Location	Date Analysed	Analyst	ilyst Client Description	Phase	%	Asbestos	%	% Other Materials %	%	Comments
32927-1b Layer 1	Chief Engineer (8-6) Jun-09-2017	Jun-09-2017	BR	Floor Tile - Tan	Adhesive - Tan 10 None Detected	2	None Detected	0	0 Non-Fibrous	100	
32927-1b Layer 2	Chief Engineer (8-6) Jun-09-2017	Jun-09-2017	BR	Floor Tile - Tan	Floor Tile - Grey 80 Chrysotile	80	Chrysotile	1	1 Non-Fibrous	86	
32927-1b Layer 3	Chief Engineer (B-6) Jun-09-2017	Jun-09-2017	æ	Floor Tile - Tan	Mastic - Black	10	10 Chrysotile	0.5	0.5 Non-Fibrous	99.5	

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LAB# 202314

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000408

Note: Samples were analyzed by method: EPA/600/R-93/116" Bulk Asbestos Analysis by Polarized Light Microscopy", For heterogenous materials the concentration may vary. No reproduction without permission.

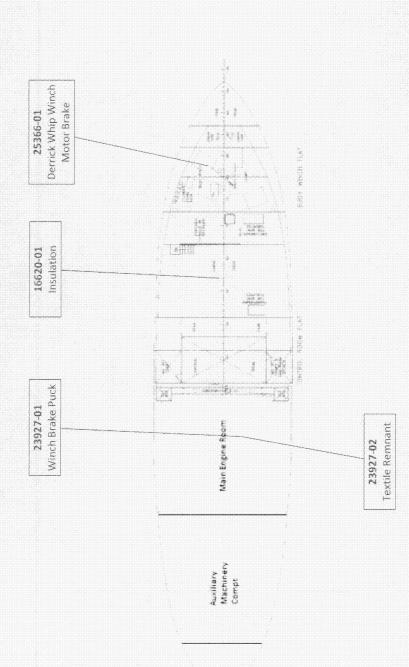
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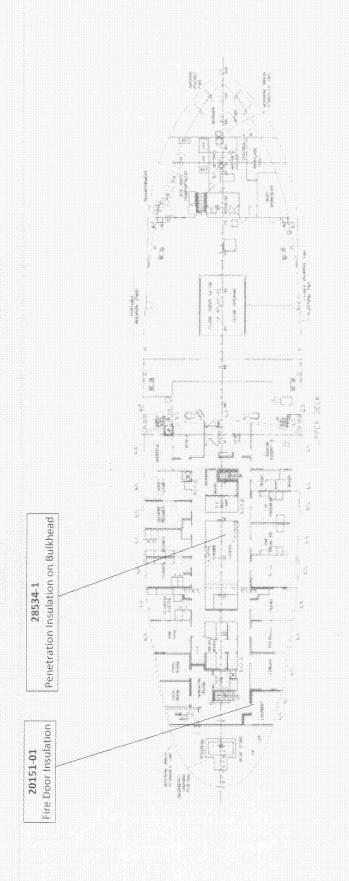
Appendix C: Sample Locations



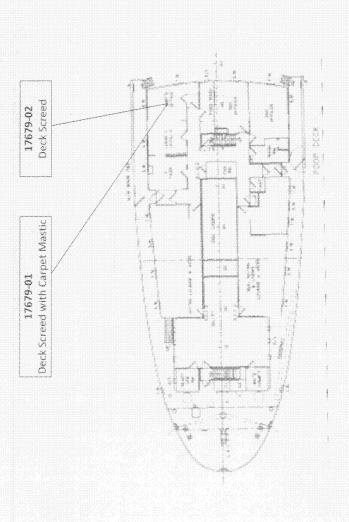


Sample Result Key	ADDRESS/LOCATION:	PROJECT NO.: 32927	
No Asbestos Detected	CCGS Bartlett	7	North West Environmental Group Ltd.
Material Contains Asbestos		SURVEYED BY: BS	#201 - 415 Gorge Boad Eact
Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)	Deck 0 Sample Locations	_	Victoria, BC V8T 2W1

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	Diawiily NOU 10 Scale		
Sample Result Key	ADDRESS/LOCATION:	PROJECT NO.: 32927	W. A.
No Asbestos Detected	CCGS Bartlett	DATE: June 26, 2017	North West Environmental Group Ltd.
Material Contains Asbestos	DRAWING TITLE:	SURVEYED BY: BS	#201 – 415 Gorge Road East
Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)	Deck 1 Sample Locations	DRAWING NO.: 002	Victoria, BC V8T 2W1



Drawing Not to Scale

ADDRESS/LOCATION: CCGS Bartlett

Sample Result Key

DRAWING TITLE:

Deck 2 Sample Locations

Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)

Material Contains Asbestos

123

8

No Asbestos Detected

123

PROJECT NO.: 32927

DRAWING NO.: 003

DATE: June 26, 2017

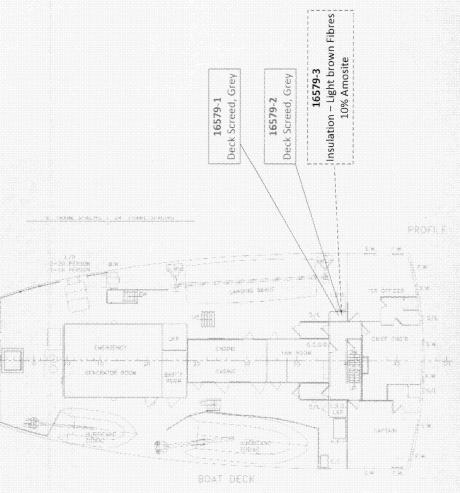
BS SURVEYED BY:

30.5

#201 - 415 Gorge Road East

North West Environmental Group Ltd.

Victoria, BC V8T 2W1



		2017 S. Environmental Group Ltd	BS #201 – 415 Gorge Road East	004 Victoria, BC V8T 2W1
	PROJECT NO.: 32927	DATE: June 26, 2017	SURVEYED BY: E	DRAWING NO.: 0
Drawing Not to Scale	ADDRESS/LOCATION:	CCGS Bartlett	DRAWING TITLE:	Boat Deck Sample Locations
	Sample Result Key	No Asbestos Detected	Material Contains Asbestos	Lead (Pb) Sample (Bolded concentrations indicate concentrations of Pb above the regulatory limit)
			123	

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Asbestos Condition Report

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

September 17, 2017 9:05 AM

To:

McMillan Cody

Cc:

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett

Senior Engineer

Subject:

FW: Refit contract spec review - Painting Hold & Winch Room

Attachments:

Alongside Refit B Spec Ver. 1.0.docx

Importance:

High

Hey Cody,

The Winch Room prep & paint job is a huge job, especially when you include 3 days at each end of Refit for de-rigging & rigging, and another 2 days on each end for de-storing & re-storing, (metal stock, tons of shackles, lubes, ropes, etc). Losing 10 days for these jobs leave approx 3 weeks for what is still a huge job.

Presumably, in your discussions with Red Crew on this matter, you've been informed that steelwork replacement will be required on the wire leads trunking, (especially stb'd). And considering that is only what is obvious, we should expect some growth work. It's looking like we'd save time to derig the derrick completely prior to prep & painting, but I'll leave that for Deck Dept to work out.

Should you be stating that all **steel replacement** will be by 1379, or is that overstating the obvious?

Additionally, the 2017 Insulation Report indicates that there is pipe lagging in the Winchroom that contains friable asbestos.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: September-16-17 4:58 PM

To: McMillan Cody

Cc: CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer

Subject: FW: Refit contract spec review - Painting Hold & Winch Room

Importance: High

Hi Cody,

- 1. Re: Winch Room Painting. Can we state in Spec that the ship's crew shall be given a 3 day window at start of tip to derig some blocks, and a 3 day window at end of refit to re-rig?
- 2. Re: Cargo Hold Painting. We'd like to cancel this item please (so as not to limit our own access to this compartment and not cause "interference" with contractor).

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Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: McMillan, Cody [mailto:cody.mcmillan@dfo-mpo.qc.ca]

Sent: September-12-17 1:38 PM **To:** CCGS-NGCC, Bartlett Chief Engineer **Subject:** Refit contract spec review

Hi Ross, here is my spec so far, it's still a bit of a work in progress but I figured I would give you the opportunity to start

reviewing the parts I do have done.

I have Contracted out in the spec the following items; Painting of the wire leads compartment and the hold floor PME TurboCharger Overhaul All 6 Main Engine electrically driven pumps Fuel Oil Transfer Pumps #1 and #2

Bilge and Ballas pump fwd engine room

I have started in there but am thinking of pulling the mess floor resurfacing. I wanted to get your opinion on that, the floor will likely be out of commission for 10 to 14 days, druing a fully crewed refit that may be difficult. Would you still like it done?

Emergency air compressor, I was going to contract to have it sent for overhaul but due to the low hours we should be able to get by with an operational test and oil samples.

The Harbour air compressor can be sent out by ships crew to a service station and doesn't need to be part of the spec. I would have liked to put windlass repairs on this spec but I feel due to the time crunch I won't have enough details on the work required to have it put in.

Everything else can be done on low dollar value contracts and paid on credit card.

Please feel free to mark this up and send it back to me next week. Let me know if there is anything else you would like to see on it and I will get the spec going for it.

Cody McMillan

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering Fisheries and Oceans Canada / Government of Canada cody.mcmillan@dfo-mpo.gc.ca / Tel: 250-363-8533

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale Pêches et Océans Canada / Gouvernement du Canada cody.mcmillan@dfo-mpo.gc.ca / Tél. : 250-363-8533

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CCGS BARTLETT – Alongside refit B FXXX – XXXXXX

DATES: December 27th 2017 TO January 24th 2018

Prepared by:

*Marine Engineering Western Region
P.O. Box 6000

9860 W. Saanich Rd.

Victoria BC*

V8L 4B2

CCGS BARTLETT - CCGS BARTLETT -

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CCGS Bartlett

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G 1.0 GENERAL NOTES

G 1.1 Vessel Particulars

G 1.1.1 Details

Name:	CCGS Bartlett					
Type:	Medium Navaids Tender					
Class:	Home Trade 1					
Year Built:	1969					
Principle Dimensions:						
Length:	57.68 m (189 Ft 3 ins)					
Breadth, molded:	51,74 m (169 ft 9 ins)					
Loaded Draft:	12.95 m (42 Ft 6 ins)					
Tonnage, displ:	3.81 m (12.5 Ft)					
	1686.8 Long Tons					
	(98% consumables with deck and hold cargo)					
Propulsion	2 x Mirrlees Blackstone KLSD M6 6-cylinder,					
	1565 kW (2100 bhp) total,					
	with 2 C.P. propeller shafts and 1 bow thruster					
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G 1.1.2 Equipment

Equipment	Make	Model	Serial#

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G 1.2 References

G 1.2.1 Regulations

G 1.2.1.1 The latest edition, at the time of contract signing, of all Acts, regulations, standards, publications, and procedures listed below are to be used as reference. The Contractor will ensure all work completed in the specification are done to all pertinent federal and territorial regulations and standards. CCG procedures are to be used as a guide if no other regulation takes precedence.

FSSM	Title	Included			
Procedures		Yes/No			
FSSM	Fleet Safety and Security Manual (Latest Edition)	Yes			
Ship Specific	Vessel Specific - Asbestos Risk Assessment Report and Management Plan	Yes			
Ship Specific	Vessel Specific – Lead Paint Test Report	No			
Publications					
TP 127	Ships Electrical Standards	No			
NFPA 306 2014	Standard for the Control of Gas Hazards on Vessels	No			
TP 3669	Standards for Navigating Appliances and Equipment	N/A			
TP 11469	Guide to Structural Fire Protection				
TP 14231	Marine Occupational Health and Safety Program	No			
TP 14612	Procedures for Approval of Life-saving Appliances and Fire Safety Systems, Equipment and Products				
TP 4414 E Guidelines Respecting Helicopter Facilities on Ships.					
IEEE45	Institute of Electrical and Electronics Engineers, Recommended Practice for Electrical Installations on Shipboard				
70-000-000-EU- JA-001	Specification for the Installation of Shipboard Electronic Equipment	No			
IEC 60533	C 60533 Electrical and Electronic installations in ships – Electromagnetic Compatibility				

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IEC 60945	Maritime Navigation and Radio communication equipment and	No
	systems – methods of testing and required test results.	
Publications -	Title	N/A
Con't		
EPS Report	Environmental Code of Practice for the Elimination of	No
1/RA/2	Fluorocarbon Emissions from Refrigeration and Air	
	Conditioning Systems - Environment Canada	
NFPA 10	Standard for portable fire extinguishers	No
18-080-000-SG-	PAINTS AND COATINGS STANDARD	No
003 (formerly		
DFO/5884 - TP		
12445E) Standards	Title	Included
Standards	1 itie	Yes/No
CCG	CCG CAD using AutoCAD	
	http://intra.coast-guard.ca/folios/00922/docs/ccgstden.zip	
CCG	CCG Electronic Data standard	
CCG	CCG Trim and Stability Book Production	
	MECTS# 3350860	
CCG	Colour Coding Standard for Piping Systems	
	30-000-000-ES-TE-001	
CSA W47.1	Certification of Companies for Fusion Welding of Steel	
	Structures Division 2 Certification	
CSA W47.2	Certification of Companies for Fusion Welding of Aluminum	
CSA W59	Welded Steel Construction - Metal Arc Welding	
CSA W59.2	Welded Aluminum Construction	
ISO 9712:2005	International Standards for NDT	
	Welding Specification	
OT 042 001	http://intra.coast-	
CT-043-EQ-EG-001-	guard.ca/folios/00922/docs/WeldingSpecification-eng.pdf	
SSPC	The Society for Protective Coatings	
ISO 8501-1:2007	Preparation of steel substrates before application of paints and	
	related products	
ISO 10816-	Mechanical vibration Evaluation of machine vibration by	
1:1995	measurements on non-rotating parts Part 1: General	
	guidelines	
Regulations	Title	Included

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		Yes/No
MOHS	Maritime Occupational Health and Safety	
CSA	Canada Shipping Act	
Machinery Regs.	Marine Machinery Regulations (SOR/90-264)	
Hull Regs.	HULL INSPECTION REGULATIONS (C.R.C., C. 1432)	
Regulations – Con't	Title	Included Yes/No
Canada Labour Code	Canada Labour Code (R.S.C., 1985, c. L-2)	
Workers' Safety & Compensation Commission work-safe regulation of the province or territory where the work is	http://www.ccohs.ca/oshanswers/information/wcb_canada.html	

G 1.2.2 Guidance Drawings

G 1.2.2.1 The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	ing Number DRAWING TITLE			
B10-77-3	VLE Phase 2 General Arrangement-Profile Sheet			
B10-1372-308	VLE Phase 2-Machinery Arrangement			
1372-51-02	Power System Schematic Drawings - Sheets 2, and 9 of 15			
B10 - 1372 - 51 -	VLE Ph2 Power System Schematic Sheet			
B10-22-2	Hatches and Manholes Rev 1			
B10-1372-11	Hull Compartment inspection and test plan			

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G 1.2.3 Tanks

G 1.2.3.1 Listed are the tanks found on board, their Location by frame number and capacity (Where available). These are to be used as reference only and will not supersede any specification.

Tank name	Location	Capacity (m³)
E. Generator Fuel Tank	Fr 11 – 13 Bridge Deck	
Lube Oil Storage Tanks A	Fr 23 – 25 Main Deck	9.91
Lube Oil Storage Tanks B	Fr 23 – 25 Main Deck	8.49
Lube Oil Storage Tanks C	Fr 23 – 25 Main Deck	8.49
Day Fuel Tank	Fr 36.5 – 38 Main Deck	5.09
Flume Stabilization Tank	Fr 51 – 56 below deck	99.13
Aft Peak W.B. Tank	Fr –0 - 4	45.98
Sterntube Compartment Void	Fr 4 - 13	N/A
DB Fuel Tank No. 3 (void)	Fr 13 - 26	
Sea Box Starboard	Fr 25 - 26	N/A
DB Fuel Tank No. 2 Port	Fr 26 - 44	45.43
DB Fuel Tank No. 2 Starboard	Fr 26 - 44	43.83
Sea Boxes (port & starboard)	Fr 43 - 45	N/A
Sea Bay Across	Fr 44 - 45	
Clean Fuel Tank Port	Fr 46 – 51	10.98

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Clean Fuel Tank Starboard	Fr 46 - 51	10.98
Oil Fuel Bunker Port	Fr 46 – 51	22.06
Oil Fuel Bunker Starboard	Fr 46 - 51	22.06
Dump Tank Port	Fr 51 – 56	29.62
Dump Tank Starboard	Fr 51 -56	29.62
Drainwell Port	Fr 56 - 57	N/A
Drainwell Starboard	Fr 56 - 57	N/A
DB Fuel Tank No. 1 Port	Fr 56 - 71	51.03
DB Fuel Tank No. 1 Starboard	Fr 56 - 71	51.03
Cofferdam	Fr 71 - 72	
FW Tank Port	Fr 72 - 80	26.20
FW Tank Starboard	Fr 72 - 80	26.20
Bow Thruster Compartment	Fr 80 - 87	N/A
Chain Locker	Fr 87 - 92	N/A
Fore Peak Water Ballast Tank	Fr 92 - 102	39.81

G 1.2.4 Abbreviations add/remove as required, if new, add to General Notes Standard Clauses

ACM: Asbestos Containing Material	MCA: Matériaux contenant de l'amiante				
CFM: Contractor Furnished Material and/or	MFE:Materials Provided by Contractor				
Equipment					
CLC: Canada Labour Code	CCT: Code canadien du travail				
CSA: Canadian Standards Association	CSA: Association canadienne de normalisation - ACNOR				
CWB: Canadian Welding Bureau	BCS: Bureau canadien du soudage				
DFO/CCG: Department of Fisheries and Oceans,	MPO/ GCC: Ministère des Pêches et des				
Canadian Coast Guard	Océans, Garde côtière canadienne				
FSR: Manufacturer's Field Service Representative	RSF: Représentant de service du fabricant				
FSSM: Fleet Safety and Security Manual	MSSF: Fleet Safety and Security Manual				
GSM: Government Supplied Material and/or	MFG: Matériel fourni par le Gouvernement				
Equipment					

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HC Harlet Carada	CC C
HC: Health Canada	SC: Santé Canada
IEEE: The Institute of Electrical & Electronic	IEEE: Institute of Electrical and Electronic
Engineers Inc.	Engineers
MSDS: Material Safety Data Sheet	FS: Fiche signalétique
NDT: Non Destructive Testing	END: Essais non destructifs
OEM: Original Equipment Manufacturer	FEO: Fabricant d'équipement d'origine
OHS: Occupational Health and Safety	SST: Santé et sécurité au travail
PWGSC: Public Works and Government Services	TPSGC: Travaux publics et Services
Canada	gouvernementaux Canada
RO: Recognized Organization as defined by	OR: organismes reconnus par la Loi sur la
Canada Shipping Act.	marine marchande du Canada
SSMS: Safety and Security Management System	SGSS: Système de gestion de la sécurité et de la
	sureté
TBS: Treasury Board of Canada Secretariat	SCT: Secrétariat du Conseil du Trésor du Canada
TA: Technical Authority -CCG Superintendent,	AT: Autorité technique - Représentant du
Marine Engineering Western Region, or her	propriétaire (GCC)
delegated Representative.	
TCMS: Transport Canada Marine Safety	SMTC: Sécurité Maritime de Transports Canada
TI: Technical Inspector – CCG delegated.	Al: Autorité de l'Inspection - Inspecteur
	technique (GCC)
VCS: Vessel Condition Survey	DCC: Demange de Changement de Configuration
VLE: Vessel Life Extension	PVN: Prolongement de vie d'un navire
WCB: Workers' Compensation Board	CNESST: Commission des normes, de l'équité, de
	la santé et de la sécurité du travail (CNESST)
WHMIS Workplace Hazardous Materials	SIMDUT: Système d'information sur les matières
Information System	dangereuses utilisées au travail

G 1.3 Conditions and Definitions

- **G 1.3.1** The following conditions and definitions are applicable to all work contained in the Specifications and are intended to outline the quality of workmanship and practice that is the minimum acceptable level:
 - a) the word "install" means that the Contractor must connect mechanically and electrically and provide the labour and materiel to complete the installation;
 - b) the word "reinstall" means a piece of equipment that the Contractor has effected repairs on and is to be returned/installed in its original location and be mechanically and electrically connected. The Contractor must provide the labour and materiel to complete the reinstallation;

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- c) the word "remove" means that the Contractor must provide all labour and materiel to remove the unit, equipment, materiel, or system in its entirety. Part of the removal process is to blank openings, restore insulation and paint;
- d) the word "relocate" means that the Contractor must provide all labour and material to remove the unit, piece of equipment, or system and to install the same unit, piece of equipment, or system in the new location;
- e) the term "or equivalent" means a substitute which has equal characteristics i.e. (size, materiel type, life, weight, input, and output) as approved by the TA. A comparison of the general specifications must be provided to the TA for the equipment specified and the "or equivalent" (i.e. old compared to the new);
- f) the term "overhaul" as applied to any mechanical equipment, structure or system comprises: disassembly into component parts; cleaning examination of parts for defects; gauging of parts for wear; reporting of parts worn beyond specification limits or otherwise defective and reassembly followed by specification adjustments; tests; and functional trials;
- g) the word "disconnect" means the Contractor must mechanically and electrically disconnect the piece of equipment of all piping, wiring, seatings and other attachments permitting the removal of the unit as a whole;
- h) the word "disassemble" means that the Contractor must provide all labour to take apart, piece by piece, the equipment, machinery or system to be examined or repaired;
- i) the word "reassemble" means that the Contractor must provide all labour and material to put together, piece by piece, the equipment, machinery or system on completion of examination or repair;
- j) the words "Additional Work Procedures" means the procedures as defined in ANNEX G - PROCEDURE FOR PROCESSING UNSCHEDULED WORK and includes any additional work required on a system, sub-system or equipment which the original specification did not specify;
- k) the word "calibrate" means the adjustment of readings and measurements to a known standard;

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- the word "check" means that the Contractor must provide labour to find faults by sighting, feeling or listening. The checking of any equipment does not involve the disturbance or removal of parts, components or sub-assemblies;
- m) the word "examine" means that the Contractor must provide labour for the process of systematically examining, checking and testing equipment, records or administrative procedures to detect actual or potential defects or errors;
- n) the word "test" means that the Contractor must provide labour to conduct the operation of a unit in relation to a stated standard or procedure;
- o) the words "set-to-work" means the tuning, alignment and adjustment of equipment/systems required subsequent to satisfactory installation. Inspection to make the equipment/systems ready for technical acceptance trials;
- p) the word "trials" is an element of QA that means an action(s) by which the Contractor proves by a visual or instrumental presentation that the equipment or system satisfies the requirements of the specified trials agenda; and
- q) the term "functional test" means operation of a piece of equipment in all its normal operating modes and throughout its operating range to establish that it will perform its designed function within normal operating parameters as indicated in the manufacturer's documentation.

G 1.4 Miscellaneous Provisions

G 1.4.1 Occupational Health and Safety

- G 1.4.1.1 The Contractor and all sub-contractors must follow Occupational Health and Safety (OHS) procedures in accordance with applicable federal and provincial OHS regulations ensuring that Contractor activities are carried out in a safe manner and do not endanger the safety of any personnel.
- G 1.4.1.2 Where "Safety Management System" is referenced in this document, it is referring to the Contractor's Safety Management System, which must be in affect while in the Contractor's Care and Custody and must be in accordance with the applicable OHS regulations and procedures.
 - a) The Contractor must, for all work on Canadian Coast Guard Vessel, meet or exceed the Safety Management System defiend in the FSSM unless a

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Contractor propsed comprehensive Safety Management System is presented and accepted by the TA.

- G 1.4.1.3 When the Contractor works on the vessel while in the Care and Custody of the Canadian Coast Guard, the Safety Management System of CCG must be followed:
 - a) Contractor and all its representatives must attend an orientation session on vessel safety before beginning any work to familiarize the Contractor's employees with the dangers specific to the vessel and with its permit systems for work protocols as well as with the procedures for safety, risk prevention, hazard response and pre-work safety assessments. The Contractor will have access to an uncontrolled copy of the Fleet Safety and Security Manual.
 - b) The Contractor must comply with the Fleet Safety and Security Manual, DFO/5737, as well as with the instructions for working on board the vessel, in addition to the relevant requirements of the Canada Labour Code during performance of the following types of work:
 - i) Work at heights;
 - ii) Entry into enclosed spaces;
 - iii)Degassing before entering into confined spaces and for hot work;
 - iv)Lockout and Tagout;
 - v) Pre-work safety assessments.
 - c) Contractor and its representatives must attend an orientation session on Vessel Safety before beginning any work to familiarize the Contractor's employees with the dangers specific to the vessel and with its permit systems for work protocols. During this session CCG will review the procedures for safety, risk prevention, hazard response and pre-work safety assessments. The Contractor will have access to an uncontrolled copy of the Fleet Safety and Security Manual.
 - d) For the purpose of the Lockout and identification procedure, the Contractor must provide the padlocks and locking devices for the Contractor's employees in addition to those provided by the Chief Engineer for the vessel's crew.
 - The Contractor must adhere to local facilities shore based safety instructions and safety procedures.

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- G 1.4.1.4 The Contractor must identify a specified person that is responsible for the safety management of the work site. The Safety Manager must insure that daily safety rounds are carried out and that safety issues are identified and safety precautions are maintained.
- G 1.4.1.5 Areas that pose a hazard as a result of the specification work are to be secured and clearly identified by the Contractor with signage to advise and protect all personnel from the hazard in accordance with applicable regulations.

G 1.4.2 Lead Paint and Paint Coatings

- G 1.4.2.1 The Contractor must not use lead based paints.
- G 1.4.2.2 CCG ships have been painted with lead based paints in the past and as a result some of the Contractor's processes such as grinding, welding and burning may release this lead from the coatings. Canadian Coast Guard will provide copies of all available lead testing results.

G 1.4.3 Touch-up / Disturbed Paint

- G 1.4.3.1 The Contractor, at a minimum, must repair coating systems disturbed as a result of the specified work. Coating systems must be in accordance with the coating system of the vessel, and be applied in accordance with the paint manufacturer's recommended procedures.
- G 1.4.3.2 *Enter applicable clauses from General Notes Standard Clauses*

G 1.4.4 Asbestos Containing Materials (ACM)

- G 1.4.4.1 The Contractor must use insulation that contains 0% ACM.
- G 1.4.4.2 The Contractor will be supplied the most recent Asbestos Risk Assessment Report and Asbestos Management Plan by CCG.
- G 1.4.4.3 Handling of any asbestos containing materials must be performed by trained personnel and/or a company certified in the removal of asbestos in accordance with Federal, Provincial/Territorial and Municipal regulations.
- G 1.4.4.4 The Contractor must provide the TA with disposal certificates for all asbestos containing material removed from the vessel indicating that the disposal was in accordance with Federal, Provincial and Municipal regulations in effect.

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G 1.4.4.5 The Contractor must provide an "Observation Report (OR)" with reference to any concerns or intentions in regards to asbestos containing materials not already specified. The Contractor is to identify any materials that are suspected to contain asbestos prior to any work being completed. Any approved work resulting from the OR will follow the Additional Work Procedures.

G 1.4.5 Confined Spaces

- G 1.4.5.1 Entry into any confined space onboard the vessel during the contract period must be conducted in accordance with the safety management system as determined in the Pre-Work Meeting. In addition to those requirements, the Contractor must also conduct the following:
 - a) Have a qualified person issues a "Gas Free Certificate" for spaces that will be entered and post the certificate outside the entrance to the space. Certificates must specify, "Safe for persons" or "safe for hot work" as appropriate.
 - b) Provide copies of all certificates generated to the TA in accordance with the Documentation section of the General Notes.

G 1.4.6 Hot Work

- G 1.4.6.1 All hot work conducted during the contract must be in accordance with the Safety Management System. In addition to the requirements of the Safety Management System the Contractor must as a minimum also:
 - a) Certify confined spaces affected by hot work as "safe for hot work" in accordance with the Confined Spaces section of the General Notes.
 - b) Remove all portable combustible materials from the vicinity, to a safe distance not less than two meters away;
 - Supply and install protective material to prevent the spread of sparks, protect electrical cables and other services;
 - d) Supply and post fire sentries in each space and in the adjacent space where welding, grinding, or burning is being carried out on bulkheads, deckheads or decks;
 - e) Supply and provide appropriate fire extinguisher(s) to the fire sentries and ensure each sentry is trained in the extinguisher's use. The fire sentry must maintain a watch in his designated area for a minimum of thirty (30) minutes

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after any hot work has been completed. The Contractor must record the sentry attendance time on all hot work permits indicating when hot work stopped, and time sentry left post;

f) Provide a copy of the site generated hot work permits to the TA in accordance with the Documentation section of the General Notes; Named in accordance with the specification item generating the required work.

G 1.4.7 Work Aloft

G 1.4.7.1 Any work aloft onboard the vessel during the maintenance/refit period must be conducted in accordance with the Safety Management System. Notices must be placed to prevent operation of Radars while personnel are working aloft on the mast or on the wheelhouse top.

G 1.4.8 Electrical Equipment

- G 1.4.8.1 When working on electrically operated equipment, the Contractor must lock-out equipment in accordance with the Safety Management System, and as a minimum conduct the following::
 - a) Isolate the main power source and any alternative power source to the equipment;
 - Install Electrical lock-outs and place electrical caution tags on the main power source and any alternate power sources for the switches/disconnects supplying the equipment under maintenance;
 - c) Verify at the terminals to ensure power is not present.
 - d) Ensure the lock-outs and electrical caution tags remain in place until completion of all work.
- G 1.4.8.2 The TA must be notified of all such ongoing work.
- G 1.4.8.3 All electrical installations and repairs must be done in accordance with the latest revisions of TP127 Electrical Standards of Transport Canada Marine Safety and of standard 45- Recommended Practice for electrical installation on ships of the IEEE. Standard TP127 takes precedence over the IEEE standard.

G 1.4.9 Workplace Hazardous Materials Information System (WHIMS)

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- G 1.4.9.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor and sub-contractor supplied WHIMS controlled products. MSDS sheets are to be the formats requested in the Documentation section of the General Notes.
- G 1.4.9.2 All MSDS sheets must be maintained in accordance with OHS procedures.
- G 1.4.9.3 The TA will provide the Contractor with access to MSDS sheets for all controlled products on the ship for all specified work items on request.

G 1.4.10 Smoking in the Work Space

G 1.4.10.1 The Contractor must ensure compliance with the Non-Smokers' Health Act. The Contractor must ensure that there is absolutely no smoking onboard the vessel by their employees, sub-contractors, including the employees of any sub-contractor.

G 1.4.11 Contractor Furnished Materials (CFM) and Tools

- G 1.4.11.1 The Contractor must ensure replacement material such as jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings etc. are in accordance with the equipment manufacturer's drawings, manuals and/or instructions.
- G 1.4.11.2 Where no particular item is specified or where substitution must be made, the Contractor must submit an Observation Report indicating the substitution or item not specified to the TA. The Contractor must provide information about materials used, certificate of grade and quality of various materials to the TA prior to use.
- G 1.4.11.3 The Contractor must provide all equipment, devices, tools and machinery such as cranage, staging, scaffolding, hoarding, and rigging necessary for the completion of the work in this specification.
- G 1.4.11.4 The Contractor must deliver and store all new CFM equipment at their facility. The CFM must be stored in a secure, environmentally controlled space in accordance with the equipment storage section of this specification.
- G 1.4.11.5 All tools are Contractor supplied unless otherwise stated in the technical specifications.

G 1.4.12 Government Supplied Materials (GSM) & Tools

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- G 1.4.12.1 Where tools are supplied by the TA they must be returned by the Contractor in the same condition as when they were borrowed. Borrowed tools must be inventoried and signed for by the Contractor on receipt and return to the TA.
- G 1.4.12.2 Any GSM not specifically stated in the Technical Specification must be received by the Contractor and stored in accordance with the Equipment Storage section of this specification. These activities are to be covered by the Procedures for Design Change or Additional Work. (PWGSC 1379).

G 1.4.13 Storage

- G 1.4.13.1 Equipment (i.e. covers, cowling and other items that may need to be removed and stored) must be stored in accordance with the equipment manufacturer's or equipment vendor's specific storage instructions. The Contractor must make these instructions available to the TA.
- G 1.4.13.2 All equipment and items must be stored in such a manner so as to be easily accessible for inspection. No items are to be stored directly on floors.

G 1.4.14 Regulatory Inspections and/or Class Surveys

G 1.4.14.1 *Enter applicable clauses from General Notes - Standard Clauses*

G 1.4.15 Contractor Inspections

- G 1.4.15.1 The Contractor must afford the opportunity for the TA to conduct an inspection with the contractor on the condition and location of items to be removed prior to either carrying out the specified work or gaining access to a location to carry out the work.
- G 1.4.15.2 The Contractor must take a before picture of conditions prior to removing any items. These photographs are to be in accordance with the Documentation section of the General Notes, named according to the specification section that resulted in removing those items.
- G 1.4.15.3 Prior to the close out of any item under this specification, the Contractor must afford the TA the opportunity to verify the work has been completed in accordance with the specification. At that time the Contractor must have available all photographs, documents, reports, and trials in relation to the item being closed out as completed.

G 1.4.16 Recording of Work in Progress

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G 1.4.16.1 The TA may record any work in progress using various means including, but not limited to, photography and video, digital or film.

G 1.4.17 Access for Maintenance, Installation, and Removal.

G 1.4.17.1 *Enter applicable clauses from General Notes - Standard Clauses*

G 1.4.18 Assembly of Components

- G 1.4.18.1 The Contractor must ensure that during installation of specified equipment, that parts and assembled equipment are cleaned of smudges, spatter or excess solder, weld metal and metal chips or any other foreign material which might detract from the intended operation, function, or appearance of the equipment. (This would include any particles that could loosen or become dislodged during the normal expected life of the equipment). All corrosive material must be removed. This cleaning must take place before the parts are assembled into the equipment.
- G 1.4.18.2 Covers, cowlings and components damaged by the Contractor must be replaced with a new CFM cover, cowling, or component.
- G 1.4.18.3 Where torque specifications are not provided by the manufacturer, the applicable SAE, ANSI, or BS1083 nut and bolt standard torque must be used.

G 1.4.19 Protection of Equipment

- G 1.4.19.1 The Contractor must take measures to ensure that surfaces and components of equipment installed on the vessel are protected against damage, soiling, and contamination as a result of contracted work.
- G 1.4.19.2 All electrical and electronic equipment and components must be protected during the contract against physical damage, internal damage, and by the effects of adverse temperatures or other environmental conditions.
- G 1.4.19.3 The Contractor must protect equipment that could be damaged as a result of movement of materials and equipment nearby. The Contractor must also protect equipment from nearby sources of contamination including but not limited to burning, welding, media (sand) blasting, grinding and painting.
- G 1.4.19.4 Any damage to surfaces, equipment, furnishings or decor incurred prior to acceptance must be returned to As-Delivered condition by the Contractor.
- G 1.4.19.5 All openings in machinery and/or systems prior to connections being made must be kept covered by fitted secure solid inserts or covers at all times.

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- G 1.4.19.6 The Contractor must obtain and follow instructions from its sub-Contractors for any special protection required for their equipment during the project work. Such instructions must be made available to the TA.
- G 1.4.19.7 Physical protection including but not limited to plastic sheets, fireproof covers, heavy weight material covers, wood plugs, wood encasements and heaters must be used as required.
- G 1.4.19.8 The Contractor must protect the vessel from the possibility of vermin infestation (insect/mammal/bird). If an infestation does occur during the contract period, the Contractor must bear all costs to ensure the vessel is made vermin free before the vessel's departure and contract completion.

G 1.4.20 Halocarbon containing Systems

G 1.4.20.1 All work conducted on Halocarbon containing systems, must be in accordance with the Federal Halocarbon Regulations, 2003 (SOR/2003-289). These regulations are avalible on the internet here: http://laws-lois.justice.gc.ca/eng/regulations/SOR-2003-289/page-1.html

G 1.4.21 Welding

- G 1.4.21.1 In addition to section 7.16 Welding Certification Contract; All welding and weld inspection must be in accordance with the CCG Welding Specification CT-043-eqeg-001. This document will be provided to the Contractor within 48 hours of written request to the TA.
- G 1.4.21.2 The governing standards for welding of materials less than 3 mm in thickness must be in accordance with the requirements of the CCG Welding Specification CT-043-eg-eq-001. For materials greater than 3 mm in thickness, the Contractor must meet the following:
 - a) For structural steels greater than 3 mm in thickness, welding must meet the requirements of CSA Standards W47.1 and W59, except as modified by the CCG Welding Specification CT-043-eg-eq-001.
 - b) For structural aluminum greater than 3 mm in thickness, welding must meet the requirements of CSA Standards W47.2 and W59.2, except as modified by the CCG Welding Specification CT-043-eg-eq-001.

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c) For structural stainless steels greater than 3mm in thickness, welding must meet the requirements of CSA Standard W47.1 and AWS D1.6, and of the CCG Welding Specification CT-043-eg-eq-001

G 1.5 Documentation

G 1.5.1 Text Documenation

- G 1.5.1.1 All text deliverables must be accompanied by a PDF file that must contain the complete document. The Contractor must check the quality to verify that the content reflects the same content/formatting as the Master Document file. In the case of changes, a second PDF file that contains only the changed sheets must be supplied.
- G 1.5.1.2 Further guidance is available from the Canadian Coast Guard Specification for Electronic Technical Data Deliverables (CA-014-000-NU-TD-001).

G 1.5.2 Data Book

- G 1.5.2.1 The Contractor must provide all documentation generated as a result of specified deliverables, in both electronic and paper formats. There must be 2 paper copies of each document, in two separate binders, as part of the contractors QA program. An electronic copy of all documentation must also be provided to the TA in accordance with the formats described in this specification section.
- G 1.5.2.2 All copies of documents generated as a result of specified deliverables will be referred to as the "Data Book".
- G 1.5.2.3 The Contractor must provide to the TA all the files generated as part of the Data Book prior to the contract being considered complete. The files must be in hard format (CD-ROM, DVD-ROM, Flash Drive / Memory Stick). Each specification item is to have its own folder named according to the specification item. For example "G1.0 General Notes".
- G 1.5.2.4 Any documentation, media, and reports that are the result of Additional Work must be included as part of the Data Book.

G 1.5.3 File Naming

G 1.5.3.1 File naming must be in the following format: Specification#.# - Date (yyyy-mm-dd) - File Name Describing Information. For Example: "G1.0 - 2013-12-01 - Details of file naming.pdf".

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G 1.5.4 E-mails

G 1.5.4.1 Any files sent to the CA/TA by e-mail must be named as per the "File Naming" section of this specification. All files that are e-mailed must have in the subject name: "Contract# - DATA BOOK - Date - Specification #". For Example: F1782-XXXXXX - DATA BOOK - 2014-11-30 - G1.0 General Notes. Files sent by e-mail must also be included in the "Data Book".

G 1.5.5 File Formatting

- G 1.5.5.1 All documentation, reports, test results, certificates, or data obtained by the contractor in paper form must be scanned into unprotected, searchable, Adobe PDF formatted files and named according to the File Naming section of this specification.
- G 1.5.5.2 All reports, test results, certificates, or raw data obtained by the contractor in electronic format must be converted to unprotected Adobe PDF formatted files and named according to the "File Naming" section of this specification. Both the original and the converted copy must be provided as part of the Data Book.

G 1.5.6 Photographs

G 1.5.6.1 All photographs obtained by the contractor as requested in the specification must be provided in .JPG formatted files at a resolution of at least 640 x 480 and named according to the "File Naming" section of this specification.

G 1.5.7 Measurements, Calibrations, and Readings.

- G 1.5.7.1 All measurements, calibrations and readings recorded, must be signed by the person taking the measurements, dated and scanned into electronic format as part of the Data Book.
- G 1.5.7.2 Unless other wise specified the Contractor must record dimensions to a precision of three significant digits in imperial along with the metric equivalent.
- G 1.5.7.3 The Contractor must provide to the TA current and valid calibration certificates, and control values for all instrumentation used in the Test and Trials Plan, showing that the instruments have been calibrated in accordance with the manufacturer's instructions. These copies are to be provided as part of the Data Book, under any specification where measurements are required,.

G 1.5.8 Test/Inspection Records and Certificates

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- G 1.5.8.1 Test and/or Inspection Records and Certificates are identified as a deliverable in the individual specification item requesting them.
- G 1.5.8.2 Test and/or Inspection Records and Certificates, must be included as a separate section in the Databook and indexed/arranged in numeric order by specification number.
- G 1.5.8.3 The Contractor is responsible for maintaining a complete and accurate record of all tests and trials conducted on the vessel and on each piece of equipment. Prior to the commencement of a trial, all relevant documentation and associated test sheets, including shop test data, must be complete and attached to the trials agenda.
- G 1.5.8.4 All tests and trials data must be legible both in hard copy and electronic format. If necessary, handwritten records may require transcription into electronic format in order to be acceptable. The original must be signed by the regulatory body, the TA, the Contractor and where necessary, by the sub-Contractors and/or FSR's who witnessed the tests. All the data must be submitted to the TA in accordance with the Documentation section of these General Notes.
- G 1.5.8.5 The Contractor must, in addition, provide originals of each certificate document to the TA in an envelope marked with the vessel's name and the works "Original Certificates"

G 1.6 Drawings

- **G 1.6.1** This section, to be referred to as the Drawings section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be drawings.
- G 1.6.2 The contractor must have on staff or through a sub-contractor a person qualified and experienced in the use of AutoCAD who will create or modify drawings that result from the work.
- **G 1.6.3** The Contractor must comply with the Canadian Coast Guard National CAD Standards titled "Computer Aided Design (CAD) using AUTOCAD" provided.
- G 1.6.4 Drawing disks must be clearly labeled with the Contract Number, file names and drawing numbers. If a complete listing exceeds the label size, a "readme.txt" file in ASCII format must be provided with each disk. A printed copy of the Readme file must accompany each disk. Disks must be labeled As-Fitted drawings for those drawings that have been approved and finalized.

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- G 1.6.5 Final As-Fitted prints/plots must not contain markings or corrections by hand (i.e. marker, pen, pencil, etc.). Drawings containing mark-ups must be revised and reprinted/plotted.
- **G 1.6.6** The Contractor must prepare all the working drawings necessary for the project requirements and modernization work.
- G 1.6.7 The Contractor must furnish all drawings required by sub-Contractors, trades and other consultants.
- **G 1.6.8** Schematic drawings of systems must include all pertinent system information, including sizes, dimensions, labeling, equipment locations, and all information relating to system fittings.
- **G 1.6.9** The Contractor must have in place a complete system of documenting and controlling all drawing revisions affected by the work of this project. Drawing numbering system and titles must match the original drawings for clarity and include a revision number with date.

G 1.6.10 Guidance Drawings

- G 1.6.10.1 All technical guidance drawings are issued to the Contractor for guidance purposes only. The Contractor must develop working drawings and to ensure that all such drawings receive applicable regulatory approval. Not all technical guidance drawings supplied are As-Fitted drawings; therefore the Contractor must physically verify affected items.
- G 1.6.10.2 All departures from the provided guidance drawings and project specifications must be clearly indicated by the Contractor and written approval obtained from the TA before carrying out such alterations or departures.

G 1.6.11 As Fitted Drawings *If Referenced*

- G 1.6.11.1 The As-Fitted Drawings are identified as a deliverable in the specification item requesting them.
- G 1.6.11.2 Upon completion of specified work, the Contractor must transfer the mark-ups from any working drawings where installation changes were made to drawings affected by the project work. These drawings become the As-Fitted drawings for the project work. The Contractor is responsible for providing updated vessel drawings affected by the project work to the TA prior to completion of the contract. The affected drawings must be submitted in the following formats:

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- a) One (1) plotted copies of the latest revision of each of the As-Fitted drawings;
- b) One (1) electronic copies of the latest revision of each As-Fitted drawing.
- G 1.6.11.3 Plotted drawings must be on standard ANSI paper sizes.
- G 1.6.11.4 Marked up drawings are to be AutoCAD drawings where original AutoCAD drawings are provided. If no AutoCAD drawings were provided then scanned files (raster format) must be supplied to CCG in one of the following formats:
 - a) DXF format;
 - b) TIFF format;
 - c) PDF format.

G 1.7 Manuals

G 1.7.1 This section, to be referred to as the Manuals section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be manuals.

G 1.7.2 General

- G 1.7.2.1 Instruction Manuals must be individually bound in a hard cover 3 ring book format with a page size of 8 1/2" x 11". Drawings of a larger size must be concertina folded to suit. The covers must have the following information printed thereon:
 - a) CCGS Bartlett;
 - b) Equipment Identification;
 - c) Equipment Manufacturer;
 - d) Date.
- G 1.7.2.2 Plastic tabbed indices must be provided for all sections of the manuals. Major equipment components must be subdivided into separate sections of the manuals.
- G 1.7.2.3 A master index must be provided at the beginning of each binder indicating all items included in each section.

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- G 1.7.2.4 A list of names, addresses and telephone numbers of contacts associated with the equipment manufacturers must be provided that can be used after the project completion for maintenance and information data purposes.
- G 1.7.2.5 A copy of the final reviewed and approved As-Fitted drawing(s) must be provided within the maintenance manual.
- G 1.7.2.6 One (1) electronic copy of each manual must be provided in accordance with the Data Book section of this specification.
- G 1.7.2.7 Two (2) paper copies of manuals and data sheets must be supplied in English for all Contractor Furnished Equipment items.

G 1.7.3 Operation Manuals - As-Fitted

- G 1.7.3.1 Operation manuals must include the following items:
 - a) General description of equipment operating sequence;
 - b) Step by step procedure to follow in commissioning the equipment;
 - c) Schematic wiring diagram for the fitted equipment; and
 - d) All pertinent equipment performance criteria.
- G 1.7.3.2 Where software/hardware systems are fitted, the operation manual must include the full software documentation manual in paper form for the system and an electronic copy in accordance with the Documentation Section. The minimum software documentation must include:
 - a) System level diagrams describing the overall scheme of the software/hardware system;
 - b) The functional specifications, which must describe in detail the functional capabilities of the system and each software components; and
 - c) Project specific program listings including all comments describing the details of the code functions.

G 1.7.4 Maintenance Manuals - As-Fitted

G 1.7.4.1 Maintenance manuals are to include:

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- a) Manufacturer's maintenance instructions for each item of the equipment requiring maintenance activity;
- b) Instructions are to include installation instructions, part numbers, part lists, master drawings and exploded views with part identification for all mechanical, electrical and electronic parts, name of suppliers;
- c) Summary list of each item of the equipment requiring lubrication, indicating the name of the equipment item, location of all points of lubrication, type of lubricant recommended, and frequency of lubrication; and
- d) Troubleshooting sections must be included for all equipment in the maintenance manual under a separate heading.

G 1.7.4.2

G 1.8 Identification

G 1.8.1 Nameplates

- G 1.8.1.1 Nameplates are identified as a deliverable in the individual specification item requesting them.
- G 1.8.1.2 All nameplates must be in English, except where required in English and French by TCM for reasons of emergency operation.
- G 1.8.1.3 Lettering must be clear and concise with the minimum use of abbreviations.

 Primary information must be given in larger size lettering than secondary information.
- G 1.8.1.4 The type of nameplates must suit the location in the vessel as specified below:

G 1.8.1.5 Plastic:

- a) Laminated plastic nameplates, black with white core engraved through to the center core, must be provided for all devices located on the exterior surfaces of switchboards, MCC's, or local control panels. Nameplates must be secured to the equipment with machine screws.
- b) New nameplates to be fitted on the existing equipment must be consistent in size and lettering with those already fitted or those being replaced.

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- c) Nameplates indicating feeder circuits must identify each circuit by name and number and the fuse size or trip element rating.
- d) The Following Labels must be of laminated plastic, red with white core engraved through to the center core:
- i) Safe Working Loads,
- ii) Warning/Caution labels,
- iii)Circuit Breakers with shunt trips requiring completion of remote circuits prior to being operated,
- iv) Equipment with multiple power sources,
- v) Circuit breaks having a potential power source connected to both sides
- vi)Indication of any other potentially hazardous condition.

G 1.8.1.6 Engraved on Metal:

- a) Must be used in machinery spaces and where exposed to the weather or susceptible to covering by paint, oil or grease. Nameplates exposed to weather must be stainless steel or brass. Engraved metal nameplates must be of stainless steel or brass with lettering accentuated by means of black wax unless otherwise noted, and secured with stainless steel or brass machine screws.
- b) A complete list of nameplates, detailing size of plate, size of lettering and inscription must be submitted to the TA for review prior to ordering and/or manufacturing.

G 1.8.2 Wire Labelling

- G 1.8.2.1 Wire Labelling is identified as a deliverable in the individual specification item requesting them.
 - G 1.8.2.1 All permanently installed cables must be tagged with the circuit designation at all points of connection and on both sides of bulkheads, decks, etc. Tags must be of metal compatible with the armor or cable sheathing. Both ends of the tags must be strapped to the cable with compatible metal strap after all painting has been completed. Straps must pass through holes in the tags so that tags are positively secured. Strap ends must be permanently folded and crimped. Adhesives of any kind will not be acceptable.

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G 1.8.2.2 All wiring in panels specified to be labelled must be labeled with the Cable Number and their conductor # unless otherwise specified in equipment installation drawings.

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SERVICES

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S 1.0 SERVICES

S 1.1	<u>GENERAL</u>
S 1.1.1	The Contractor must supply the following services to the vessel for the entire work period and disconnect upon completion of the work period.
S 1.1.2	All staging, cranage, screens, lighting, and any other support service, equipment, and material necessary to carry out the work identified in these specifications must be Contractor supplied.
S 1.2	BERTHING
S 1.2.1	Ship will be Berthed at 25 Huron street and berthing will be conducted by ships crews
S 1.3	MOORING LINES
S 1.3.1	Mooring lines will be tended to by ships crew
S 1.4	GANGWAYS
S 1.4.1	Gangways and ship access will be tended to by ships crew
S 1.5	ELECTRICAL POWER
S 1.5.1	Not used
S 1.6	ACCOMMODATION/MACHINERY AREA DECK PROTECTION
S 1.6.1	Not Used
S 1.7	<u>HEATING</u>
S 1.7.1	Not Used
S 1.8	WORKSITE INSPECTIONS
S 1.8.1	During the work period, the Contractor must maintain their work areas in the vessel in a clean condition, free from debris and remove garbage daily.
S 1.8.2	Upon completion of the contract, the Contractor must return the vessel to the As-

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S 1.12.1 Not Used

S 1.13.1 Not Used

SECURITY

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S 1.8.3	Prior to the completion of the Acceptance Document, the Contractor's QA Representative, and the TA must perform an inspection of the vessel to view all areas where work was performed by the Contractor.
S 1.8.4	Copies of all photos, documentation, and inspection sign off sheets must be provided in accordance with the Documentation section of the General Notes.
S 1.9	FIRE PROTECTION
S 1.9.1	Not Used
S 1.10	PROJECT FACILITIES
S 1.10.1	Not Used
S 1.11	PORTABLE TOILETS
S 1.11.1	Not Used
S 1.12	CONTRACTOR'S ACCESS TO VESSEL FACILITIES

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10.0 Safety and Security

10.1 SPECIFICATION ITEM- LEVEL 2

- 10.1.A Identification
- 10.1.A.1 *Brief Statement of Specification Contents or General Instruction Level 4*
- 10.1.B References
- 10.1.B.1 Equipment Data
- 10.1.B.1.1 *Equipment Details in statements or a table*
- 10.1.B.2 Drawings
- 10.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets

10.1.B.3 Regulations and Standards

10.1.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		

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Safety and Security

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Regulations	
10.1.C *Statement	of Work*
	t of work – Main Statement– Level 4*
10.1.C.1.1 *Stateme	ent of work - Main Statement- Level 5*
a) *I	.ist of Statements – Level 6*
i) *Sub List of items – Level 7*
10.1.C.2 *SOW Sec	ction Title* Verify correct number
10.1.C.2.1 *5 th Leve	After Bold* Verify correct number
10.1.D Proof of Per	rformance
10.1.D.1 Inspection	Points *- Not used*
10.1.D.1.1 *Any ho	ld points or inspection requirements*
10.1.D.2 Testing/T	rials *- Not used*
10.1.D.2.1 * Details	of any tests or trials*
10.1.D.3 Certificati	on *- Not used*
10.1.D.3.1 *Certific	ates in accordance with the Documentation section of the General Notes.*
10.1.D.4 Documen	tation *- Not used*
10.1.D.4.1 *Docume Notes.*	entation in accordance with the Documentation section of the General
10.1.D.5 Training *	- Not used*

10.1.A.1.1 *All training requirements.*

Hull and Related Structures

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11.0 Hull and Related Structures

11.1 PAINTING OF WIRE LEADS COMPARTMENT AND HOLD

11.1.A Identification

- 11.1.A.1 This specification provides the requirement of areas to be prepared and treated.

 The Interspec technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.
- 11.1.A.2 The Contractor must complete painting of the wire leads compartment and main hold as detailed in the attached interspec technical specification by International Paint.
- 11.1.A.3 Painting of other areas such as equipment pedestals are as mentioned in this document and in the attached Interspec technical specification by International Paint.

11.1.B References

11.1.B.1 Equipment Data

11.1.B.1.1 The coating system will consist of

Area	Description
A frame gantry – Repair	An Intershield 121, abrasion resistant, aluminium pure epoxy primer with Interfine 5703 single pack acrylic modified Polysiloxane finish.
Wire Room, Deck – Repair	An Interbond 998 surface tolerant epoxy scheme
Wire Room, Deckhead and bulkheads — Repair	An Intershield 121, abrasion resistant, aluminium pure epoxy primer with Interfine 5703 single pack acrylic modified Polysiloxane finish.
Ship's Hold Deck Derimeter – Repair	An Interbond 998 surface tolerant epoxy scheme

11.1.B.2 Drawings

11.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet	
Drawing Number	DRAWING TITLE	Number of Sheets

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	1 of 3 Rev 3.pdf	}
N/A	Interspec Paint Specification – Bartlett Coating Spec 2018	
	Winter Refit 11 09 2017 Rev 2	
B10-18-5	Buoy Winch Seatings Sheet 1 of 1 Rev 0	
B10-24-1-X	Rigging Diagram Sheet 1 of 1 Rev 0	

11.1.B.3 Regulations and Standards

11.1.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
FSSM	Fleet Safety and Security Manual (Latest Edition)	Yes
Ship Specific	Vessel Specific – Lead Paint Test Report	Yes
Publications		
18-080-000-SG-003	Paints and Coatings Standard	No
Standards		
ISO 8501-1:2007	Preparation of steel substrates before application of paints and related products	No
	Interspec Paint Specification – Bartlett Coating Spec 2018 Winter Refit 11 09 2017 Rev 2	Yes
Regulations		

11.1.C *Statement of Work*

- 10.1.D.2 The Contractor must complete painting of the wire leads compartment and main hold as detailed in the attached interspec technical specification by International Paint.
- 10.1.D.3 No sandblasting operations will be performed when there is a risk of mechanical, pneumatic or electrical components becoming contaminated by the ingress of abrasive materials. For this reason, every effort must be made by the contractor to ensure that all sandblasting work is completed before machinery disassembly. When this is not

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possible, the contractor must take the appropriate measures to ensure that all vulnerable machinery items are protected in an efficient and effective manner.

- i) All davit wires and crane wires must be completely wrapped to prevent entry of grit. The Contractor must supply all coverings.
- ii) The derrick wires, blocks, and pins must be completely wrapped to prevent entry of grit. The Contractor must supply all coverings.
- 10.1.D.4 All interference items must be removed for access and painted separately.
- 10.1.D.5 Identifying insignias, stripes, vessel's name, port of registry, load line, etc. must be given two coats of white paint as specified in the Interspec specification. All the identification markings must be painted; decals must not be used.
- 10.1.D.6 All coatings must be applied in accordance with the manufacturer's instructions. Re-coat times must be adhered to.

11.1.D Proof of Performance

11.1.D.1 Inspection Points

- 10.1.D.1.1 The Contractor must follow the quality control requirements identified in the Paint Specification, including the hold points.
- 10.1.D.1.2 All paint work preparation must be in accordance with manufacturer recommendations and under guidance of a NACE certified Inspector and printed reports must be provided. The inspector must view the work prior to commencement of painting, and after each coating. The shipyard must contract the NACE Inspector from International Paint (contact Mr. Keegan Gemmil)
- 10.1.D.1.3 The NACE Inspector must obtain the latest information and advice on the Paint system from Mr. Keegan Gemmil, Account Executive, International Paint, 2435 Beta Avenue, Burnaby BC V5C 5N1, tel 604 940 4479, cel 604 315 4347, Keegan.Gemmill@akzonobel.com

11.1.D.2 Testing/Trials *- Not used*

11.1.D.3 Certification

10.1.D.1.4 The contractor must supply a copy of the NACE Certificates in accordance with the Documentation section of the General Notes.

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11.1.D.4 Documentation

11.1.D.4.1 The contractor must prepare and submit paint reports to verify that coatings were applied in accordance with the Interspec Paint Specification – Bartlett Coating Spec 2018 Winter Refit 08 09 2017

11.1.D.5Training *- Not used*

11.2 FUEL TANK INSPECTIONS (TCM SURVEY)

11.2.A Identification

- 11.2.A.1 The following tanks must be opened, certified safe for entry, and must be cleaned and prepared for survey.
- 11.2.A.2 On completion of the work the tanks must be closed up with new CFM oil resistant nitrile (NBR) gaskets. The contractor must remove and re-install with new gaskets all the tank covers (2 per tank).

11.2.B References

11.2.B.1 Equipment Data

10.1.D.1.5 List of Tanks

Description	Frame Location	TCM Field No.
DB Fuel Tank No. 2 Port	Fr 26 - 44	3L022
DB Fuel Tank No. 2 Starboard	Fr 26 - 44	3L023

11.2.B.2 Drawings

11.2.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes .

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	

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B10-22-2	Hatches and Manholes Rev 1	
B10-1372-11	Hull Compartment inspection and test plan	

11.2.B.3 Regulations and Standards

11.2.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		
	Canada Shipping Act 2001	No
	Hull Inspection Regulations (C.R.C., C. 1432)	No

11.2.C *Statement of Work*

- 11.2.C.1 The contractor must open the tanks for inspection. Access to the Tanks is through manholes in the main engine room. On completion of all work the contractor must close up the tank using new CFM oil resistant nitrile (NBR), and must clean and re-use the bolts, nuts and washers.
- 11.2.C.2 The tank must be ventilated and certified as safe for entry.
- 11.2.C.3 Removal and re-installations of interference items to facilitate the work must be included.

11.2.D Proof of Performance

11.2.D.1 Inspection Points

11.2.D.1.1 The open tanks must be witnessed by the IA, the TA and the TC-MSB Surveyor

11.2.D.2 Testing/Trials *- Not used*

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11.2.D.3 Certification

11.2.D.3.1 The Contractor must also provide a copy TC-MSB Division III survey credit to the TA.

11.2.D.4 Documentation

- 11.2.D.4.1 The Contractor must supply the TA with a digital copy of a report detailing the work undertaken, defects, repairs made and measurements and readings taken.
- 11.2.D.4.2 The Contractor must provide a Quality Assurance (QA) report indicating that all disturbed parts of the work have been inspected by the Contractor's QA department for correct installation and fit.

11.2.D.4.3

11.2.D.5Training *- Not used*

12.0 Propulsion and Manuevering

12.1 PORT MAIN ENGINE TURBOCHARGER OVERHAUL

12.1.A Identification

- 12.1.A.1 The Port Main engine Turbocharger is at its 10000 hour service interval
- 12.1.A.2 The Turbocharger needs to be exchanged with the spare rotor for survey to the satisfaction of the ABB delegate. The work will be done by CCG crew with contractor assistance as specifically noted in the specification.
- 12.1.A.3 The Contractor must sub-contract a FSR from ABB Canada Inc to oversee and assist with Turbo exchange work by CCG crew. The FSR must provide guidance for all aspects of the work and must provide direct advice to CCG.

 Contact:

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Byron Meston
End User Sales and Service
Western Canada
ABB Inc.
Turbocharging Service Division
1538 Kebet Way
Port Coquittam BC V3C 5M5
Mobile: (604) 376-7402
Email: byron.i.meston@ca.abb.com

12.1.B References

12.1.B.1 Equipment Data

12.1.B.1.1 The Turbo is manufactured by Brown Boveri and is a model VTR 320, Specification Z4R 429 II 113. Serial Number 73493

12.1.B.1.2 TCm Item 3D010

12.1.B.2 Drawings

12.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	
B10-1372-308	VLE Phase 2-Machinery Arrangement Rev 1	
B10-12-28	Main Engine Turbocharger	

12.1.B.3 Regulations and Standards

12.1.B.3.1 The following Standards and Regulations apply to work carried out in this section;
The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
FSSM	Fleet Safety and Security Manual (Latest	Yes

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Publications		
Standards		
Regulations		

12.1.C *Statement of Work*

- 10.1.D.7 CCG staff will assist the ABB FSR in the exchange of the Turbocharger Core and related equipment. The Core that is removed is to be sent with ABB for overhaul and returned back to the vessel after overhaul is completed.
- 10.1.D.8 Description of Work;
- 10.1.D.8.1 For the turbo, the service must include replacement of:
 - a) Rotor Assembly
 - b) Induser
 - c) Impellor
 - d) Nozzle Ring
 - e) Cover ring
 - f) Diffuser
 - g) Re-felting
 - h) Seals, gaskets, ect
- 10.1.D.9 The removed core is to be returned to ABB, overhauled and then returned to the ship.

12.1.D Proof of Performance

12.1.D.1 Inspection Points

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10.1.D.10 The following inspections are required to be verified by the TI/TA

10.1.D.10.1 Prior to final survey, contractor must provide a Mechanical Completion Report, and a written proof that a competent person inspected and approved the system and installation. Report shall be submitted to TA prior to invitation for final survey

12.1.D.2 Testing/Trials *- Not used*

12.1.D.3 Certification *- Not used*

12.1.D.4 Documentation *- Not used*

10.1.D.11 Drawings and reports

10.1.D.11.1 Inspection and Service Report

12.1.D.5Training *- Not used*

12.2 MAIN ENGINE ELECTRICALLY DRIVEN PUMPS (TCM SURVEY)

12.2.A Identification

12.2.A.1 The Contractor is required to disconnect and remove from the vessel, the standby main engine electrically driven sea water pump and motor, the standby main engine electrically drive fresh water pump, The Port and Starboard main engine electrically driven sea water pumps, and Port and Stbd ME Electrically driven Fresh water pumps. The pumps and motors shall be opened up, cleaned and then prepared for inspection by the TI, TA and for survey by the TCM surveyor in order to obtain the necessary Division III credit.

12.2.B References

12.2.B.1 Equipment Data

12.2.B.2 Name Plate Data

12.2.B.2.1 All 6 pumps are Iron Pump Model CNL 80-80/200-2 with NEMA 7.5hp Electric motors, 450VAC, 3P, 60Hz 3600 RPM.

12.2.B.2.2 Implellor style 3523, 220mm DIA

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12.2.B.2.3 Pump is rated for 49 cubic meters per hour

12.2.B.3 TCM item numbers for pumps

PUMP NAME	TCM ITEM NUMBER
Standby Main Engine Sea Water pump	3H019
Standby Main engine fresh water pump	3H020
Port Main Engine Salt Water Pump	3D013
Port Main Engine Fresh water Pump	3D014
STBD Main Engine Salt Water Pump	3D035
STBD Main Engine Fresh Water Pump	3D036

12.2.B.1 Drawings

12.2.B.1.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	
B10-1372-308	VLE Phase 2-Machinery Arrangement Rev 1	

12.2.B.2 Regulations and Standards

12.2.B.2.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		

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Regulations	

12.2.C *Statement of Work*

10.1.D.12 GENERAL

- 10.1.D.12.1 The contractor is responsible for all removals of deck plates, fixtures, piping, etc., required to gain access to the work. These may include but not be limited to grids, floor plating and sections of piping. Location of these interference items can be sighted at the time of viewing. The contractor is responsible for all rigging, staging, and cranage for the removal and installation to carry out the Work.
- 10.1.D.12.2 All piping is to be suitably blanked off so as to prevent the ingress of dirt and to prevent damage prior to re-installation onboard the vessel, Tape wrappings or blanking pieces may be used as required, to provide adequate protection. Loose rags stuck into open pipes will NOT be acceptable. Any damage incurred due to the use of loose rags will be to the Contractor's account.
- 10.1.D.12.3 All parts and equipment removed from the space, whether for repair or to gain access, are to be suitably protected in a dry heated storage area and are to be inspected for corrosion or deterioration before being re-installed. All finely finished or machined surfaces of parts opened or removed, are to be adequately protected from damage when exposed, moved, or removed. This is of particular importance in the case of journal bearings, shafts, pins, or gear meshing surfaces. If removed, such surfaces are to be preserved against corrosion as well as physical damage
- 10.1.D.12.4 On completion of all work all removed interference items shall be returned to "as found" condition. All sections of piping that have been removed shall be reinstalled using new gaskets where applicable.
- 10.1.D.12.5 Any defects or deficiencies found are to be brought to the immediate attention of the IA and the TA for remedial action. Any deficiencies if found will be addressed by PWGSC 1379 action.
- 10.1.D.12.6 The Contractor shall supply all materials, cleaning fluids, rags, etc. necessary to carry out this work. The Contractor shall be responsible for notifying the TCM Surveyor when the work is ready for inspection.

12.2.C.1 Overhaul Procedure

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- 12.2.C.2 The Contractor must disassemble the pumps and motors into their component pieces.
- 12.2.C.3 Contractor to clean and inspect the pump component pieces. The contractor must conduct the following work:
 - 12.2.C.3.1 Replace the pump bearings.
 - 12.2.C.3.2 Check and record impellor and wear ring clearances.
 - 12.2.C.3.3 Renew mechanical seal, Seal Kit will be provided by Ship.
 - 12.2.C.3.4 The contractor must reassemble the pump on completion of survey using new gaskets, seals and sealants.
- 12.2.C.4 The contractor must clean and inspect the motors and conduct the following work:
 - 12.2.C.4.1 Replace the motor bearings with new Contractor supplied bearings.
 - 12.2.C.4.2 Megger test the stator windings and forward results to the TI/TA.
- 12.2.C.5 The contractor must reinstall the pumps and motors on the vessel and connect all pipe work using Contractor supplied gaskets

12.2.D Proof of Performance

12.2.D.1 Inspection Points

- 10.1.D.13 Inspection
- 10.1.D.13.1 The following must be witnessed by the IA, the TA and the TC-MSB Surveyor:
 - a) The pump components laid out for survey.
 - b) The motor components laid out for survey.
- 10.1.D.1.2 The following must be witnessed by the IA and the TA:
 - a) The pump components laid out for survey.
 - b) The motor components laid out for survey

Power Generation Systems *- not used*

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12.2.D.2 Testing/Trials

- 12.2.D.1.2 The Following tests are to be performed:
- a) On completion of reassembly a four (4) hour functional test shall be performed on each unit.

12.2.D.2 Certification

10.1.0.13.2 The Contractor must provide a copy TC-MSB Division III survey credit to the TA.

12.2.D.3 Documentation

- 10.1.D.13.3 The Contractor must supply the TA with a digital copy of a report detailing the work undertaken, defects, repairs made and measurements and readings taken.
- 10.1.D.13.4 The Contractor must provide a Quality Assurance (QA) report indicating that all disturbed parts of the work have been inspected by the Contractor's QA department for correct installation and fit.

12.2.D.4Training *- Not used*

13.0 Power Generation Systems *- NOT USED*

- 13.1 *SPECIFICATION ITEM- LEVEL 2*
- 14.0 Power Distribution Systems *- NOT USED
- 14.1 *SPECIFICATION ITEM- LEVEL 2*
- 15.0 Auxiliary Systems
- 15.1 OVERHAUL FUEL TRANSFER PUMPS (TCM SURVEY)
- 15.1.A Identification

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Auxiliary Systems

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15.1.A.1 The Contractor is required to disconnect and remove from the vessel, the Number 1 and Number 2 Fuel transfer pumps. The pumps and motors shall be opened up, cleaned and then prepared for inspection by the TI, TA and for survey by the TCM surveyor in order to obtain the necessary Division III credit.

15.1.B References

15.1.B.1 Equipment Data

Pump Make:

Roper 3600

Size

2"

Specification

6970

Type:

One

Figure:

3611 MGHBRV

Speed:

433 RPM (through a reduction gear)

Total Head:

50 PSI

Capacity GPM:

50 IGM (227 l/min)

Serial:

276917 & 276924

Reduction Gear

Roper N41-1

Ratio:

(3.94:1 ratio)

Electric Motor

CGE

Model

118435 Type K

HP

3

Frame

184

RPM

1705

Volts

440/3phase/60Hz

Serials

984082 & 984076

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PUMP NAME	TCM ITEM NUMBER
Number 1 Fuel Transfer Pump	3H001
Number 2 Fuel Transfer Pump	3H002

15.1.B.2 Drawings

15.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	
B10-1372-308	VLE Phase 2-Machinery Arrangement Rev 1	

15.1.B.3 Regulations and Standards

15.1.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

15.1.C *Statement of Work*

10.1.D.13.5 The contractor is responsible for all removals of deck plates, fixtures, piping, etc., required to gain access to the work. These may include but not be limited to grids, floor plating and sections of piping. Location of these interference items can be sighted

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at the time of viewing. The contractor is responsible for all rigging, staging, and cranage for the removal and installation to carry out the Work.

- 10.1.D.13.6 All piping is to be suitably blanked off so as to prevent the ingress of dirt and to prevent damage prior to re-installation onboard the vessel, Tape wrappings or blanking pieces may be used as required, to provide adequate protection. Loose rags stuck into open pipes will NOT be acceptable. Any damage incurred due to the use of loose rags will be to the Contractor's account.
- 10.1.D.13.7 All parts and equipment removed from the space, whether for repair or to gain access, are to be suitably protected in a dry heated storage area and are to be inspected for corrosion or deterioration before being re-installed. All finely finished or machined surfaces of parts opened or removed, are to be adequately protected from damage when exposed, moved, or removed. This is of particular importance in the case of journal bearings, shafts, pins, or gear meshing surfaces. If removed, such surfaces are to be preserved against corrosion as well as physical damage
- 10.1.D.13.8 On completion of all work all removed interference items shall be returned to "as found" condition. All sections of piping that have been removed shall be reinstalled using new gaskets where applicable.
- 10.1.D.13.9 Any defects or deficiencies found are to be brought to the immediate attention of the IA and the TA for remedial action. Any deficiencies if found will be addressed by PWGSC 1379 action.
- 10.1.D.13.10 The Contractor shall supply all materials, cleaning fluids, rags, etc. necessary to carry out this work. The Contractor shall be responsible for notifying the TCM Surveyor when the work is ready for inspection.

15.1.C.1 Overhaul Procedure

- 15.1.C.1.2 The Contractor must disassemble the pump, gearbox and motor into their component pieces.
- 15.1.C.1.3 Any piping and wiring removed or disconnected to carry out the Contractor's work are to be suitably blanked off or secured to prevent the ingress of dirt and protect the cabling from damage.

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- 15.1.C.1.4 Contractor to clean and inspect the pump component pieces. The contractor must conduct the following work:
- 15.1.C.1.5 Measure and record the pump drive and idler gears.
- 15.1.C.1.6 Measure and record drive and driven shaft diameters.
- 15.1.C.1.7 Measure and record casing bushings.
- 15.1.C.1.8 Inspect relief valve seat, valve and spring.
- 15.1.C.1.9 Renew shaft gland packing.
- 15.1.C.1.10 The contractor must reassemble the pump on completion of survey using new CFM gaskets, seals and sealants.
- 15.1.C.1.11 Contractor to clean and inspect the pump reduction gearbox component pieces. The contractor must conduct the following work:
- 15.1.C.1.12 Replace bearings (CFM).
- 15.1.C.1.13 Inspect the pinion and drive gear.
- 15.1.C.1.14 Replace lip seals.(CFM).
- 15.1.C.1.15 The contractor must reassemble the reduction gearbox on completion of survey using new (CFM) gaskets, seals and sealants. Contractor to fill casing to correct operating level using new contractor supplied Shell Omala 68 oil (approx 1 litre each)
- 15.1.C.1.16 The contractor must clean and inspect the motors and conduct the following work:
- 15.1.C.1.17 Replace the motor bearings with new (CFM) bearings.
- 15.1.C.1.18 Megger test the windings and forward results to the TI/TA.
- 15.1.C.1.19 The contractor must reassemble the motor on completion of survey
- 15.1.C.1.20 Any defects or deficiencies in the pumps, reduction gears or motors are to be brought to the immediate attention of the TI and the TA for remedial action. Any deficiencies if found will be addresses by PWGSC 1379 action.

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Auxiliary Systems

CCGS Bartlett

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15.1.C.1.21 Contractor to ensure pump casings are filled with fuel prior to start of testing, (do not to start the pumps in a completely dry condition)

15.1.D Proof of Performance

15.1.D.1 Inspection Points

- 10.1.D.13.11 The following must be witnessed by the IA, the TA and the TC-MSB Surveyor:
 - a) The pump components laid out for survey.
 - b) The motor components laid out for survey.
- 10.1.D.1.2 The following must be witnessed by the IA and the TA:
 - a) The pump components laid out for survey.
 - b) The motor components laid out for survey

15.1.D.2 Testing/Trials

15.1.D.2.1 Contractor must carry out a functional test of the transfer pumps. Pumps are to be tested for one (1) hour under normal operational conditions to the satisfaction of TCM, TI/TA

15.1.D.3 Certification

15.1.D.3.1 The Contractor must also provide a copy TC-MSB Division III survey credit to the TA.

15.1.D.4 Documentation

- 15.1.D.3.2 The Contractor must supply the TA with a digital copy of a report detailing the work undertaken, defects, repairs made and measurements and readings taken.
- 15.1.D.3.3 The Contractor must provide a Quality Assurance (QA) report indicating that all disturbed parts of the work have been inspected by the Contractor's QA department for correct installation and fit.

15.1.D.5Training *- Not used*

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15.2 BILGE AND PALLAST PUMP OVERHAUL FWD ENGINE ROOM (TCM SURVEY)

15.2.A Identification

15.2.A.1 The Contractor is required to disassemble the bilge/ballast pump and motor located in the stbd forward engine room. The pump and motor shall be opened up, cleaned and then prepared for inspection by the TI, TA and for survey by the TCM surveyor in order to obtain the necessary Division III credit.

15.2.B References

15.2.B.1 Equipment Data

Pump Make: KSB Bilge/Ballast

Size 4"

Type: VBS 65-23/1 F Vertical Centrifugal

Speed: 1750 rev/min

Total Head 70 ft (30 PSI)

Capacity GPM: 34 Lt/h (long tons)

Year of Mfg. 1968

<u>Serial</u> 535 706

Electric Motor CGE

Model 118431

<u>HP 7.5</u>

Volts 440/3phase/60Hz

Serial 984060

PUMP NAME TCM ITEM NUMBER

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Bilge and Ballast Pump STbd Fwd Eng Room	3H008
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15.2.B.2 Drawings

15.2.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	
B10-1372-308	VLE Phase 2-Machinery Arrangement Rev 1	
B10-15-166	GS Pump by KSB	

15.2.B.3 Regulations and Standards

15.2.B.3.1 The following Standards and Regulations apply to work carried out in this section;
The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

15.2.C *Statement of Work*

15.2.C.1 The Contractor must disassemble the pump and motor into their component pieces.

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Auxiliary Systems

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- 15.2.C.2 Any piping and wiring removed or disconnected to carry out the Contractor's work are to be suitably blanked off or secured to prevent the ingress of dirt and protect the cabling from damage.
- 15.2.C.3 Contractor to clean and inspect the pump component pieces. The contractor must conduct the following work:
- 15.2.C.4 Replace the pump bearings. (CFM bearings, 2 per pump)
- 15.2.C.5 Check and record impellor and wear ring clearances.
- 15.2.C.6 Renew gland packing (CFM), Chesterson, Soft Nr. 322, 8mm x 8mm.
- 15.2.C.7 Inspect shaft coupling insert.
- 15.2.C.8 The contractor must reassemble the pump on completion of survey using new CFM gaskets, seals and sealants.
- 15.2.C.9 The contractor must clean and inspect the motors and conduct the following work:
- 15.2.C.10 Replace the motor bearings with new (CFM) bearings.
- 15.2.C.11 Megger test the stator windings and forward results to the TI/TA.
- 15.2.C.12 The contractor must reassemble the motor on completion of survey.
- 15.2.C.13 Any defects or deficiencies in the pump or motor are to be brought to the immediate attention of the TI and the TA for remedial action. Any deficiencies if found will be addresses by PWGSC 1379 action.

15.2.D Installation:

15.2.D.1 The contractor must reconnect the pump and motor on the vessel and connect all pipe work using (CFM) gaskets.

15.2.E Installation:

15.2.E.1 The contractor must reconnect the pump and motor on the vessel and connect all pipe work using (CFM) gaskets.

15.2.D Proof of Performance

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Auxiliary Systems

CCGS Bartlett

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15.2.D.1 Inspection Points

- 15.2.D.1.1 The following must be witnessed by the IA, the TA and the TC-MSB Surveyor:
 - a) The pump components laid out for survey.
 - b) The motor components laid out for survey.
- 15.2.D.1.2 The following must be witnessed by the IA and the TA:
 - c) The pump components laid out for survey.
 - d) The motor components laid out for survey

15.2.D.2 Testing/Trials

15.2.D.2.1 Contractor must carry out a functional test of the motor and pump. Pump is to be tested for one (1) hour (sea to sea) to the satisfaction of TCM, TI/TA.

15.2.D.3 Certification

15.2.D.3.1 The Contractor must also provide a copy TC-MSB Division III survey credit to the TA.

15.2.D.4 Documentation *- Not used*

- 15.2.D.4.1 The Contractor must supply the TA with a digital copy of a report detailing the work undertaken, defects, repairs made and measurements and readings taken.
- 15.2.D.4.2 The Contractor must provide a Quality Assurance (QA) report indicating that all disturbed parts of the work have been inspected by the Contractor's QA department for correct installation and fit.

15.2.D.5 Training *- Not used*

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Domestic Systems

CCGS Bartlett

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16.0 Domestic Systems

16.1 MESS DECK RESURFACING

16.1.A Identification

16.1.A.1 *Brief Statement of Specification Contents or General Instruction – Level 4*

16.1.B References

16.1.B.1 Equipment Data

16.1.B.1.1 *Equipment Details in statements or a table*

16.1.B.2 Drawings

16.1.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes

Drawing Number	DRAWING TITLE	Number of Sheets
B10-77-3 77-3	Bartlett-VLE Phase 2 General Arrangement-Profile Sheet 1 of 3 Rev 3.pdf	

16.1.B.3 Regulations and Standards

16.1.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		

Alongside Refit B Spec Ver. 1.0.DocxCCGS BARTLETT.Docx

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Domestic Systems

CCGS Bartlett

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Regulations	

16.1.C *Statement of Work*

16.1.C.1 *Statement of work – Main Statement– Level 4*

16.1.C.1.1 *Statement of work - Main Statement- Level 5*

- a) *List of Statements Level 6*
- i) *Sub List of items Level 7*

16.1.C.2*SOW Section Title* Verify correct number

16.1.C.2.1 *5th Level After Bold* Verify correct number

16.1.D Proof of Performance

16.1.D.1 Inspection Points *- Not used*

16.1.D.1.1 *Any hold points or inspection requirements*

16.1.D.2 Testing/Trials *- Not used*

16.1.D.2.1 * Details of any tests or trials*

16.1.D.3 Certification *- Not used*

16.1.D.3.1 *Certificates in accordance with the Documentation section of the General Notes.*

16.1.D.4 Documentation *- Not used*

16.1.D.4.1 *Documentation in accordance with the Documentation section of the General Notes.*

16.1.D.5Training *- Not used*

16.1.D.5.1 *All training requirements.*

<u>16.2</u>

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Deck equipment *- not used*

CCGS Bartlett

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- 17.0 Deck equipment *- NOT USED*
- 17.1 *SPECIFICATION ITEM- LEVEL 2*
- 18.0 Communications and Navigation *- NOT USED*
- 18.1 *SPECIFICATION ITEM- LEVEL 2*
- 19.0 Control Systems *- NOT USED*
- 19.1 *SPECIFICATION ITEM- LEVEL 2*

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

October 2, 2017 10:27 AM

To:

McMillan Cody

Cc:

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC,

Bartlett Chief Officer; CCGS-NGCC, Bartlett Engine Room

Subject:

FW: Latest Contract Spec - 11.0 Winch Room Painting Spec

Attachments:

Bartlett Coating Spec 2018 Winter Refit 25 09 2017 rev3.pdf

Thanks. NWE should be visiting today to assess the ACM. It is possible that the pipe lagging is high enough & in good enough condition that it will not pose a hazard to workers – but it will make it impossible for us to replace as sea, (becing that we are not technically qualified to handle asbestos). I imagine that they've contacted you regarding whether you want a report in addition to sample test results. Presumably, you've OK'd report. It's always good to have their suggestions & opinion documented.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: McMillan, Cody [mailto:cody.mcmillan@dfo-mpo.gc.ca]

Sent: October-02-17 8:16 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: RE: Latest Contract Spec - 11.0 Winch Room Painting

Attached is the interspec, I will elaborate on the ACM's in the spec, thanks for reminding me.

Cody McMillan Marine Engineering | Ingénierie navale (250) 363-8533

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccqs-ngcc.qc.ca]

Sent: September-30-17 5:52 PM

To: McMillan, Cody

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer

Subject: RE: Latest Contract Spec - 11.0 Winch Room Painting

Cody,

Can we see the International Paint Interspec Technical Spec ? 11.1.A.3 refers to painting Main Hold in addition to "Wire Leads Compartment" (Winch Room).

You might want to elaborate of ACMs": Pipe lagging identified as positive ACM, and most other areas there is no suspect ACM.

Shouldn't we consider it a high risk (to contractors & ship's crew) job to perform extensive work in Winch Room with ACM pipe lagging?

Thanks,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: McMillan, Cody [mailto:cody.mcmillan@dfo-mpo.qc.ca]

Sent: September-29-17 2:55 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: Latest Contract Spec

Hi Ross, this is where I am at right now. Have a look at it and mark it up.

Cody McMillan

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering Fisheries and Oceans Canada / Government of Canada cody.mcmillan@dfo-mpo.gc.ca / Tel: 250-363-8533

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale Pêches et Océans Canada / Gouvernement du Canada cody.mcmillan@dfo-mpo.gc.ca / Tél. : 250-363-8533

Pages 477 to / à 528 are duplicates sont des duplicatas

Sheppard, Frederick

-		
	From:	CCGS-NGCC, Bartlett Chief Engineer
	Sent:	December 29, 2017 4:22 PM

To:

Cc: McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief

Officer

Subject:

FW: Winch Room Pipe Lagging ACM Testing

Attachments:

34440-ABV1.0 - CCGS Bartlett.pdf

& Cody,

A total of 28 point were tested for ACM in the Winch Room, (including deck non-skid paint for vermiculite). This was an ideal opportunity to perform a full testing of this compartment, (because it was empty), and to properly asses the risk to the prep & painting crew. Nice to be able to correct erroneous data in asbestos survey.

The lead paint test results will not be received until Jan.2nd, and we expect the paint to test positive for lead. And as per previous email, TCLP documentation will have to be processed for disposal of hazardous paint waste products, (if tests positive for Lead).

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: December-29-17 4:12 PM To:

Cc: McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room

Subject: FW: Winch Room Pipe Lagging ACM Testing

Mark,

Contrary to the ships annual Asbestos survey, the pipe insulation in the winch room tests negative for asbestos containing material. (Lagging sampled at 8 points.)

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: December-29-17 3:03 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: Subject: Re: CCGS Bartlett Dec 29

Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

s.20(1)(b)

s.20(1)(b) s.20(1)(c)

Hi Ross, bulk report attached. Report to follow next week. Happy New Year!

Sent from my Samsung Galaxy smartphone.

----- Original message -----

From:

Date: 2017-12-29 10:45 AM (GMT-08:00)

To: BartlettCE@bar.ccgs-ngcc.gc.ca

Cc:

Subject: CCGS Bartlett Dec 29

Hi Ross, my contact info below. Thanks for contacting me regarding this work.

As discussed on site, you will be having paint contractors working in the Winch compartment removing and renewing paint in proximity to suspect asbestos containing materials. After reviewing the work with you, we concluded that NWest would conduct a WorkSafeBC-compliant hazardous materials assessment of the compartment. Samples will be analysed RUSH and will be sent to you as we receive them. As discussed CCG will be responsible for any repairs to piping insulation sampled by NWest (NWest will tape sample locations in the interim). The official report will follow early next week.

This will be on a time and materials basis. Our rates below:

Technologist - per hour Project Manager - per hour

Senior Project Manager - per hour

Sample analysis: asbestos RUSH - per sample

Sample analysis: lead RUSH - per sample (lead samples have to be sent to a different lab. Results early next

week).

Misc. (courier, mileage, consumables etc) -

Note that waste paint will have to be tested for leachability. Your paint contractor may already have accounted for this. If not, NWest can do the testing when there is waste paint available. This testing is a requirement for disposal of materials under the BC Hazardous Waste Regulation Table 1 Leachate Quality Standards (regulated by the BC Ministry of Environment).

Will you provide a PO or need any other info to produce one?

Best regards,



Happy Holidays! NWest has donated to The Mustard Seed in lieu of sending cards and gifts to our clients this season. We wish you and yours all the best now and in the future.

North West Environmental Group Ltd.

C.

P. 250-384-9695 ext. | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only. If received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.

No further information has been removed or severed from this page

N.W. North West Seem Ltd.

Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett Winch Compartment 2017-18

Date: December 29, 2017

Client Job or PO#: NEED

Project number: 34440

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34440-1b Layer 1	Winch Compartment - Port Side	Dec-29-2017	Ж	6" Dia, Pipe Lagging	Pipe Wrap - Off White/Silver/Brow n	20	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-1b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-2b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brow n	20	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-2b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-3b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brow n	50 1	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-3b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	6" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	
34440-4b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brow n	20	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-4b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Insulation - Yellow	50	None Detected	0	Glass	100	

AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS 域色、

PAT PROGRAMS

LAB# 202314

000532

Sample No	Location	Date Analysed	Analyst	Description	Phase	8	Asbestos	%	Other Materials	%	Comments
34440-5b Layer 1	Winch Compartment - Port Side	Dec-29-2017	æ	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brow n	20	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-5b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR.	3" Dia. Pipe Lagging	Insulation - Yellow	20	None Detected	0	Glass	100	
34440-6b Layer 1	Winch Compartment - Port Side	Dec-29-2017	BR.	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brow n	20	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-6b Layer 2	Winch Compartment - Port Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Insulation - Yellow	20	None Detected	0	Glass	100	
34440-7b Layer 1	Winch Compartment - Starboard Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Pipe Wrap - Off White/Silver/Brow n	20	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-7b Layer 2	Winch Compartment - Starboard Side	Dec-29-2017	BR	3" Dia, Pipe Lagging	Insulation - Yellow	20	None Detected	0	Glass	100	
34440-8b Layer 1	Winch Compartment - Starboard Side	Dec-29-2017	BR	3" Dia, Pipe Lagging	Pipe Wrap - Off White/Silver/Brow n	50	None Detected	0	Glass (45%) Cellulose (5%) Non-Fibrous (50%)	100	
34440-8b Layer 2	Winch Compartment - Starboard Side	Dec-29-2017	BR	3" Dia. Pipe Lagging	Insulation - Yellow	20	None Detected	0	Glass	100	
34440-9b	Winch Compartment - Decking on Port Side	Dec-29-2017	BR	Anti-Skid Coating	Brown/Grey/Silver	100	None Detected	0	Non-Fibrous	100	
34440-10b	Winch Compartment - Decking on Port Side	Dec-29-2017	BR	Anti-Skid Coating	Brown?Grey/Silver	100	None Detected	0	Non-Fibrous	100	
34440-11b	Winch Compartment - Decking on Starboard Side	Dec-29-2017	BR	Anti-Skid Coating	Brown?Grey/Silver	100	None Detected	0	Non-Fibrous	100	
34440-12b	Winch Compartment - Floor of Starboard Side	Dec-29-2017	BR	Debris	Red	100	None Detected	0	Non-Fibrous	100	
3440-13b	Winch Compartment - Floor of Starboard Side	Dec-29-2017	BR	Debris	Red	100	None Detected	0	Non-Fibrous	100	
34440-14b	Winch Compartment - Floor of Starboard Side	Dec-29-2017	BR	Debris	Red	100	None Detected	0	Non-Fibrous	100	
34440-15b	Winch Compartment - Bulkhead Facing Aft	Dec-29-2017	BR	Firestop	Brown	100	None Detected	0	Non-Fibrous	100	
34440-16b	Winch Compartment - Bulkhead Facing Aft	Dec-29-2017	BR	Firestop	Brown	100	None Detected	0	Non-Fibrous	100	



000533

Sample No	Location	Date Analyst	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34440-17b	Winch Compartment - Bulkhead Facing Aft	Dec-29-2017	BR	Firestop	Brown	100	100 None Detected	0	0 Non-Fibrous	100	
34440-21b	Winch Compartment Wall - Starboard Side	Dec-29-2017	*	Putty	Brown/Black	100	100 None Detected	0	0 Non-Fibrous	100	
34440-22b	Winch Compartment Wall - Starboard Side	Dec-29-2017	#	Putty	Brown/Black	501	100 None Detected	0	0 Non-Fibrous	100	
34440-23b	Winch Compartment Wall - Starboard Side	Dec-29-2017	88	Putty	Brown/Black	100	100 None Detected	0	0 Non-Fibrous	100	



s.16(2)

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s.21(1)(b)

Sheppard, Frederick

From: Sent: To: Cc:

CCGS-NGCC, Bartlett Chief Engineer

January 1, 2018 1:36 PM

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room

CCGS-NGCC, Bartlett Captain

Subject:

FW: ACM Abatement Training - Internal Audit Asbestos NCR

Importance:

High

Ryan,

FYI. Attached correspondence from last patrol applies to us too.

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: December-26-17 1:09 PM

To: McMillan Cody

Subject: Internal Audit Asbestos NCR

Hi Cody,

During our audit last week we ended up with a minor NCR regarding Asbestos Abatement training.

.... I will be in contact next trip to get something sorted out.

7.A.10

3.3 ASBESTOS ABATEMENT TRAINING

- a) Asbestos abatement training, to the level of Type 2 work, as defined by applicable provincial occupational health and safety regulations, shall be provided, by a provincially recognized training provider, to crew members identified by the Asbestos Coordinator. A minimum of two per crew, normally from the engineering department, will be trained. Refresher training will be provided on a periodic basis as determined by the Asbestos Coordinator and SME and defined within the VSAMP.
- b) All asbestos abatement trained personnel are to maintain the currency of their respirator fit testing, as per the CCG Respiratory Protection Program.

c) The VSAMP shall be reviewed annually during shipboard Occupational Health and Safety committee meetings, ensuring that both crews on dual crewed vessels are aware of the VSAMP.

Thanks

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

January 1, 2018 2:26 PM

To:

'George Kohorst'

Cc:

McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine

Roon

Subject:

FW: Transit Testing - Asbestos Work etc.

Importance:

High

Happy New Year George,

Just thought I'd contact you with a brief note of Bartlett Refit work / status. The next time I'll do so, I'll use the Refit Worklist I gave you initially, then it would function as template for Refit Electrical Report

- EL-01 Cable Transit Packing / Sealing. In Progress. Regarding deck transit above Sewage Media Tank. I've got LGF Environmental contractors aboard on Wed. Jan.3rd to quote on this ACM job.
- EL-02 Electrical Terminal Maintenance In Progress. And mark will be discussing Intercon Survey Items will you
 in this regard (Main Eng Cooling Pumps and FO Tran Pumps).
- Incl. EL-22a & EL-22b
- EL-03 MCR Console Electronic Maintenance In Progress.
- EL-04 Transformer Service In Progress.
- EL-05 Main Engine Pyrometer Upgrade. (Assistance to ship's crew)
- EL-06 Distribution Ground Faults & Meter. In Progress
- EL-10 Fire Door Hold Back. (MCR door and Foc'sle Bosun's Stores door Re: Running wires for Fire door magnetic release / holdbacks) * This did not make it onto your original list for some reason. If possible we'd like to have this work done (running wires for Viking) earlier on in the Refit if possible please.

Many Thanks. Talk to you on Wed.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: George Kohorst [mailto:kohoconsulting@shaw.ca]

Sent: December-29-17 6:58 AM

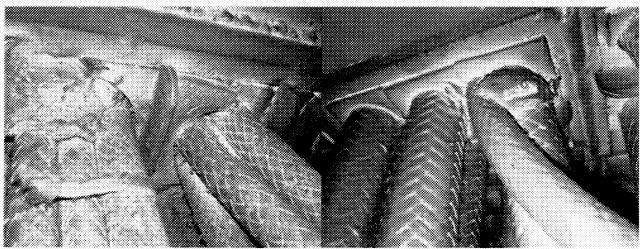
To: CCGS-NGCC, Bartlett Chief Engineer

Cc: McMillan Cody; CCGS-NGCC, Bartlett Captain **Subject:** Re: Transit Testing - Asbestos Work

Importance: High

Good Morning

I figured that I would send a few pictures of the transits to show the current state they are in. Of the five transits in that area four of them have multiple cables through single transit blocks as shown. There are also gaps around other cables due to the wrong size blocks being used such as a row of 3 x 30mm blocks and one 20mm block in the same row. If there is any loose asbestos laying on top of these it would fall on us while working from below and also contaminate the space below so before they are disturbed the clean up is required. As Ross has stated the refit has just started so there is time to deal with these properly.



George Kohorst 250 881-2901 kohoconsulting@shaw.ca



On Dec 28, 2017, at 10:08 AM, CCGS-NGCC, Bartlett Chief Engineer < BartlettCE@ccgs-ngcc.gc.ca> wrote:

Cody,

George has done some preliminary investigation on the desk transit above AMS sewage tank, and it is definitely not watertight. He's asking if we can use a firestop injection method to repair, but considering that it is only the start of Refit, I think that we should be addressing the problem properly.

This will entail at least a minimum of asbestos work. I am suggesting that we get an estimate from as asbestos abatement company to remove the adjacent non-asbestos bulkhead panel on alleyway bulkhead above the transit (which is connected to the asbestos bulkhead above the transit on the Upper Deck), and perform an internal cleanup of the topside of the transit to ensure that workers below the transit to do get exposed to loose asbestos dust (from 95% ACM bulkhead panels).

George & I have discussed the financial aspects of this job, and this is best discussed over phone.

Ross McKenzie Chief Engineer, CCGS Bartlett Page 539
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s.19(1) de la Loi sur l'accès à l'information.

Sheppard, Frederick

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

January 2, 2018 8:33 AM

To:

Cc:

McMillan Cody;

Subject:

FW: CCGS Bartlett Dec 29 - Winch Room Paint Testing Reports forthcoming

Attachments:

34440-ABV1.0 - CCGS Bartlett.pdf

Good Morning & Happy New Year,

Please forward paint testing reports when they become available.

Many Thanks.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: December-29-17 3:03 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: Re: CCGS Bartlett Dec 29

Hi Ross, bulk report attached. Report to follow next week.

Happy New Year!

Sent from my Samsung Galaxy smartphone.

----- Original message -----

Date: 2017-12-29 10:45 AM (GMT-08:00)

To: BartlettCE@bar.ccgs-ngcc.gc.ca

Cc:

Subject: CCGS Bartlett Dec 29

Hi Ross, my contact info below. Thanks for contacting me regarding this work.

As discussed on site, you will be having paint contractors working in the Winch compartment removing and renewing paint in proximity to suspect asbestos containing materials. After reviewing the work with you, we concluded that NWest would conduct a WorkSafeBC-compliant hazardous materials assessment of the compartment. Samples will be analysed RUSH and will be sent to you as we receive them. As discussed CCG will be responsible for any repairs to piping

insulation sampled by NWest (NWest will tape sample locations in the interim). The official report will follow early next week.

This will be on a time and materials basis. Our rates below:

s.19(1)

Technologist - per hour

s.20(1)(b)

Project Manager - per hour

s.20(1)(c)

Senior Project Manager - per hour

Sample analysis: asbestos RUSH - per sample

Sample analysis: lead RUSH - per sample (lead samples have to be sent to a different lab. Results early next

week).

Misc. (courier, mileage, consumables etc) -

Note that waste paint will have to be tested for leachability. Your paint contractor may already have accounted for this. If not, NWest can do the testing when there is waste paint available. This testing is a requirement for disposal of materials under the BC Hazardous Waste Regulation Table 1 Leachate Quality Standards (regulated by the BC Ministry of Environment).

Will you provide a PO or need any other info to produce one?

Best regards,



Happy Holidays! NWest has donated to The Mustard Seed in lieu of sending cards and gifts to our clients this season. We wish you and yours all the best now and in the future.

Project Manager

North West Environmental Group Ltd.

C. 🕼

P. 250-384-9695 ext. 211 | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only, if received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.

Pages 552 to / à 554

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pages 532 to / à 534

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

Sent:

January 4, 2018 4:25 PM

To:

CCGS-NGCC, Bartlett Chief Engineer

Cc:

McMillan Cody; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior

Engineer

Subject:

RE: Winchman's Cabin & ACM

Hi Ross,

Thanks for the note. Yes, as long as asbestos containing materials are not being disturbed in any way there should be no issue. The only thing I would double check if I were you are that whatever flooring is going in won't prematurely delaminate if placed on top of the existing, and that the carpet doesn't go over any tiles.

Otherwise, if you are concerned with any of the ACM tile being disturbed, we now have capacity to start the job on Tuesday of next week, and I would expect it to be 1-1.5 days as a moderate risk removal (leaving the bulkhead in place and undisturbed).

Please let me know, and thanks for your help,

Sincerely,

Development Manager Hazpro Environmental Ltd Address

Cell

Office 250-891-4977 Fax 250-220-2252

www.hazpro.org

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From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Thursday, January 04, 2018 1:40 PM

To:

Cc: McMillan Cody; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer

Subject: FW: Winchman's Cabin & ACM

Importance: High

Afternoon

In the interest in staying within the timeline allotted by Winchman's cabin furnishing contractor (Pronautic), we will not be preventing them from completing the cabin work in the interest of removing ACM tiles. Presently they can have their work completed tomorrow, and that is what we're allowing them to do.

I did tell them that they cannot fasten anything to the ACM bulkhead or to tiles without involving you.

Please call and/or visit today if you think that I might be missing part of this picture.

Regards, s.16(2)

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

<u>BartlettCE@bar.ccgs-ngcc.gc.ca</u> <u>BartlettChief@gmail.com</u> for files above 5 MB

This email was scanned by Bitdefender

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:	CCGS-NGCC, Bartlett Chief Engineer
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Sent: January 8, 2018 10:42 AM

To:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Captain; McMillan Cody;

CCGS-NGCC, Bartlett Engine Room

Subject: RE: Asbestos analytical report - Waste Oil Tank Bulkheads

Importance: High

Hi

Many Thanks. Asbestos! Interesting. Yes, we'll need to talk, especially being that we want to have that area reinsulated soon. And it therefore looks like Quantum Murray Environmental may be appropriate for this re-insulation job.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: January-08-18 9:50 AM

To: CCGS-NGCC, Bartlett Chief Engineer **Subject:** Asbestos analytical report

Hi Ross, I'll give you a shout this afternoon to discuss. In the mean time the area should be made off limits to unorotected workers.

Sent from my Samsung Galaxy smartphone.

Sheppard, Frederick

---- Original Message -----

From:

Sent: To:	CCGS-NGCC, Bartlett Chief Engineer January 15, 2018 3:21 PM FW: CCGS Bartlett - Waste Oil Tank job - Clearnance Letter loc jan12.pdf		
Hi . You may find value in atta	ching attached clearance letter to oil Waste Oil Tank documentation folder.		
Regards,			
Ross McKenzie Chief Engineer, CCGS Bartlett Cell: BartlettCE@bar.ccgs-ngcc.gc.ca BartlettChief@gmail.com for files ab	ove 5 MB		
From: Sent: January-15-18 9:13 AM To: CCGS-NGCC, Bartlett Chief Eng Subject: FW: CCGS Bartlett	gineer		
Ross, Please find attached the asbestos Regards,	and lead paint clearance letter from Ralmax Contracting.		
Yard Superintendent, Point Hope Maritime Ltd.			
From: Sent: Friday, January 12, 2018 4: To: Subject: RE: CCGS Bartlett	14 PM		
Good afternoon			
	outlines the procedures used to complete the scope of work. any questions or concerns.		
thank you			
Ralmax Contracting Ltd.			

Hi

Could you email me a report for the asbestos and lead paint abatement that you completed today on the CCGS Bartlett.

Thanks,

Yard Superintendent Point Hope Maritime

D	Δ	L	M	A	X
-	_				_

Jan. 12, 2018

Point Hope Maritime Ltd 327 Harbor Rd Victoria BC V8T 3S2

Attn:	

Regarding: Ralmax Contracting Asbestos and lead based paint Removal from CCGS Bartlett.

Ralmax Contracting Ltd was contacted by of Point Hope Maritime to clean an area contaminated with asbestos containing debris.

- January 10th, of Ralmax Contracting mobilized tools, equipment and materials to CCGS Bartlett located at 25 Huron Street. He set up an exclusion zone around the work area with asbestos barrier tape and applied chemical paint stripper to a pipe that needed to be stripped of paint.
- January 11th, returned to remove the lead based paint. Drop sheets were placed under the area being striped and the paint was removed (wet) by a hand held scrapper. The entire area behind the waste oil tank was vacuumed using a H.E.P.A filtered vacuum to remove dust and debris from ceiling, walls and floor.
- As there was a thick, sticky, semi wet layer of oily debris on the tray, used a hand scrapper to lift and dispose of this layer.
- A grease solvent was applied to the tray to remove any residual oil. The solvent was completely removed with soap and water using rags to wipe it up.
- Finally, the lead based paint in the tray and surrounding area chipped and flaking.

 used a hand scraper and H.E.P.A. vacuum to remove loose and flaking paint.
- A fine mist of encapsulant was sprayed throughout the area to lock down any remaining micro dust.

All waste has been appropriately disposed of at a licensed facility. The asbestos and lead hazards have been removed from within the spaces making the area safe for re-entry.

Regards

Hazmat Abatement

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:	CCGS-NGCC, Bartlett Chief Enginee
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Sent: January-28-18 1:48 PM **To:** CCGS-NGCC, Bartlett Logistics Officer

Subject: FW: Bartlett Wheelhouse Console ACM Wireing Insulation IIR

Attachments: 34596 AB1 V1#1-7.pdf; ACM - Wire Insulation.jpg; Wheelhouse Console ACM - Wiring

Insulation.pdf

For your records.

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: January-28-18 10:12 AM

To: Young Renee

Cc: McMillan Cody; CCGS-NGCC, Bartlett Captain

Subject: Bartlett Wheelhouse Console ACM Wireing Insulation IIR

Hi Renee,

Attached is the Bartlett's IIR and supporting documentation for asbestos containing electrical wire insulation found in Wheelhouse consoles.

Please confirm receipt.

Thank you.

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca



Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865

e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett Wheelhouse Wire Testing 2018-01-22

Date: January 24, 2018

Client Job or PO#: NEED

Project number: 34596

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-1b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	OC	Wire (Green)	Wire Wrap - Green	\$	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-1b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Green)	Wire Insulation - Black	09	None Detected	0	Non-Fibrous	100	
34596-2b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	ЭD	Wire (Dark Grey)	Wire Wrap - Black	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	8 <u>1</u>	
34596-2b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	ОС	Wire (Dark Grey)	Wire Insulation - Black	09	None Detected	0	Non-Fibrous	100	
34596-3b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	ЭD	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Celtulose (50%) Non-Fibrous (50%)	0 0 1	
34596-3b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Black)	Wire Insulation - White	09	Chrysotile	70	X0 Synthetic	30	
34596-4b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	ЭD	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-4b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	ЭD	Wire (Black)	Wire Insulation - White	09	Chrysotile	70	Synthetic	30	1
34596-5b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	ЭD	Wire (Dark Grey)	Wire Wrap - Dark Grey	40	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-5b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	οc	Wire (Dark Grey)	Wire Insulation - Black	09	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials, Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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PAT PROGRAMS

ATHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-6b -ayer 1	WH Fire Detection Console Panel	Jan-24-2018	S.	Wire (Dark Grey)	Wire Wrap - Red 40 None Detected	8	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	8	
34596-6b ayer 2	WH Fire Detection Console Panel	Jan-24-2018	ЭD	Wire (Dark Grey)	Wire Insulation - (Black	9	60 None Detected	0	0 Non-Fibrous	81	
34596-7b .ayer 1	Stbd Bridge Wing Console	Jan-24-2018	OC	Wire (White)	Wire Wrap -	40	40 None Detected	0	Cellulose (90%) Non-Fibrous (10%)	901	
34596-7b Layer 2	Stbd Bridge Wing Console	Jan-24-2018	OC	Wire (White)	Wire Insulation - EBlack	۷ 99	60 None Detected	0	0 Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

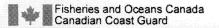
The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials, Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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LAB# 202314

000564



INCIDENT INVESTIGATION REPORT (IIR) 9.B.1 NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence. A. Type of Incident (Required) (Choose only one) Disabling Injury (visit to medical professional, time lost) Loss of Consciousness due to electric shock or toxic atmosphere First Aid Near Miss Minor Injury (visit to medical professional, no time lost) Pollution Activation of an Emergency Procedure Property Damage Fire or Explosion (Shore only) □ Unsatisfactory Condition Other (specify) B. General Information (Required) Employer's (Department) Name Site/Vessel Name (and official number) **CCGS Bartlett** Canadian Coast Guard Date of Report (YYYY-MM-DD) 2018-01-28 Mailing Address 25 Huron Street Victoria BC V8V 4V9 Name of Responsible Supervisor Matthew Jackson Supervisor's Telephone # 250-882-1273 Organization (Select One) □ National HQ Coast Guard College Region (if selected, choose Directorate and Program/Branch below) Regional Directorate (Select One) ☐ AC's Office ☐ Fleet ☐ IBMS □ ITS Incident Management Navigational Programs Program/Branch (Select One) Refit and Maintenance AtoN MarSup □ ROC Canso ☐ MCI SAR □ cgss ☐ MCTS □ E&I ☐ ME ☐ Science ☐ EFM (C&P) MNS ∇essels of Concern ∏ ER MSET ☐ Other ☐ Ice Ops Business □ILS C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed. Surname Given Name Initial(s) Age Gender Job Title Years of experience in current Female Male position **Employment Status**



Indeterminate

Other (Specify)

Term

Contractor

Program Client

☐ Student

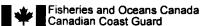
Casual/Relief

Fisheries and Oceans Canada Canadian Coast Guard		And and I want		24 FC MAR C 3 C CAMPA OF PARC C FO
D. Incident Information (Required)				The state of the s
Did this involve a motor vehicle* accid		es, please ensure t apleted.	he <u>Motor Vehicle Accide</u>	nt (MVA) Report is
Did this involve Helicopter Operations	? Yes 🗌 No 🔀 Did	this incident involve	Small Craft Operations	? Yes 🗌 No 🛭
Location of Incident (include geograph	phical name of body of wat	ter, waterway, harbo	our, latitude, longitude if	applicable)
Alongside Victoria Coast Guard Base	Refit Period			
Date of Incident (YYYY-MM-DD) 201	8-01-24	Time of Incident (Local) 1600	
Body part injured (if applicable)				
Abdomen Back	Eye	□ Neck	☐ Knee	Pelvis / Groin
☐ Arm ☐ Body Syster	n / Internal 🔲 Foot	☐ Head	Leg	☐ Shoulder
Auditory Chest	☐ Hand	☐ Hip	Multiple injuries	Unknown
Nature of injury (if known)				
Burns		☐ Multiple Injurie	es	
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E. Investigation Information (Requ	ired)			
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Caught in or between	Exposure to a tra	aumatic event	Slips, trips and fa	alls
Contact with harmful substance		pment Failure	Struck by or aga	inst
Exposure to Electricity		arm unknown	☐ Vehicle incident	
Exposure to Fire	Overexertion		Other (specify)	
Exposure to heat/cold	Repetitive Motion	n		1
Exposure to noise				
Description of Incident - Sequence of parts relevant to the investigation or		sheets, chart(let)s,	diagrams, location of an	y failed or damaged
January 22, 2018 - Electrical wire an Starboard Control Console to be test January 24, 2018 - Asbestos test res Asbestos (70%). The insulation teste Recommendation from Northwest Err be asbestos containing until samples January 26, 2018 - Northwest Enviro insulation test results with the Project is a good indication the dust may not the greatest concern in the shedding shows wire wrap in good overall conchour turnaround) requested on test reseat attached photo of the wiring take top wires in the bottom terminal strip	ted for asbestos. Sults received, two of the second positive while the wire value of the second positive while the wire value of the second positive while the second positive was to contain asbestos, as chaft asbestos fibers. Visual in dition. Samples couriered esults. Results expected second positive was the second positive positive was the second positive was th	even samples wire swrap (jacket) tested access to location dust samples from the Environmental, the ffing wire wraps while spection of asbesto to a laboratory in N January 30, 2018.	samples returned positive negative. See attached and consider any dust in the two consoles. Discuss negative result of asbest characteristics due is contain asbestos due is containing wiring during way Jersey for analysis was not connected in the formal service.	e for Chrysotile pdf of test results. nside the console to ssing the wire stos in the wire wrap to vibration would be ng dust sampling vith a rush order (6-
Was a Risk Assessment performed p	rior to commencement of t	he task which resul	ted in the incident?	☐Yes ☐No
Specify				

. .	Fisheries and Oceans Canada
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T	Fisheries and Oceans Canada Canadian Coast Guard

Vas accident prevention training provided in relation		S □ N
Specify		
F. Immediate/Direct Causes (Required) (Check all	that apply)	
Substandard Actions	Substandard Conditions	- "
Bypassin g safety devices	☐ Congested or restricted area	
Failure to check or monitor	☐ Defective tools, equipment or materials	
Failure to communicate/coordinate	☐ Excessive noise	
☐Failure to follow procedure/policy	☐Heat/cold exposure	
Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE	
Failure to react/correct	☐Inadequate communication	
Failure to service equipment properly	☐Inadequate guards or barriers	
Failure to use PPE	☐Inadequate information/data	
Failure to warn or secure	☐Inadequate instruction/procedure	
]Horseplay	☐Inadequate preparation/planning	
∐lmproper lifting	☐Inadequate support/assistance	
☐Improper loading, placing, mixing	☐Inadequate ventilation	
Improper position/posture for task	☐Inadequate warning system	
Operating at improper speed	Lack of tools, equipment or materials	
Using defective equipment	☐ Poor housekeeping	
Using equipment improperly		
Other action (Specify)	Radiation exposure	
**************************************	□ Uneven ground/terrain	
	Weather or environmental conditions	
	Other condition (Specify)	
mmediate/Direct Causes (Required)		
Of the above checked immediate/direct causes prov	ide details as to which one was the leading cause of the incident.	
Use of wiring containing asbestos insulation during v	vessel construction. The asbestos insulated wire makes up part of the with a cloth wrap or PVC insulated. The wiring in the Bridge cons	

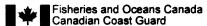
G. Basic/Root Causes (Required) (Che	eck all that apply	')			
Personal Factors			Job Factors		
☐Emotional stress			Abuse or misuse of equip		
Fatigue		Inadequate engineering of	_		
Lack of knowledge and/or skill			Inadequate hazard asses		
Physical stress or capability			Inadequate personnel to	•	
Rushing or inattention			Inadequate tools/equipme		
Other (Specify)			Inadequate training and/o		
			☐ Inadequate work standard ☐ Lack of enforcement of p	-	
			Standards/procedures no		•
			Wear and tear		
			⊠Other (Specify)		
			Incomplete identification an	d abatemen	t of hazardous
Danie (Danie (Danie d))			Internals officers		
Basic/Root Causes (Required) Of the above checked Basic/Root cause					
Electrical insulation on wires installed ou Surveys. Asbestos-containing wiring co rubber jacketed bronze armored cables.	itside of high hea nnects via termi	at location	on had been overlooked in pr s to rubber insulated cloth wr	evious Asbe apped wires	estos Management which are part of
H. Witnesses (As Required) (NOTE: Witinformation)	tness statements r	may be re	equired depending on the severi	ty of the incid	ent – Attach all additional
Name of Witness # 1	Telephone #		Name of Witness # 3		Telephone #
Matthew Jackson C/E	250-882-1273				
Name of Witness # 2	Telephone #		Name of Witness # 4	Telephone #	
Steve Buss S/E	250-882-1273				
I. Property / Equipment Damage (As R	lequired)				
Nature and extent of property damage					Estimated Cost (\$)
J. Corrective & Preventative Measures recurrence)	s (Required) (De	escribe o	corrective measures taken ar	nd/or recomr	nended to prevent
Currently awaiting test results of dust from Plan for abatement of dust and wiring to Extensive work on the bridge consoles with the property of the property	be determined			January 30,	2018.
Corrective action responsibility assigned	d to	Date to	be completed (YYYY-MM-DD)	Follow-up	Date (YYYY-MM-DD)
Chief Engineer/Vessel Maintenance Ma		ASAP			- 10 W. Maria (A. 1900)
		l 			



K. Investigation Completed By (Required)					
Name of person investigating	Telephone	# S	Signature		
Matthew Jackson	250-882-1	273 N	Matt Jackson	Digitally signed by Matt Jackson N1: cn=Matt Jackson, o=Coast Guard, ou=Coast Guard, mas=Bardetto@coge=ngo; pc.ca, c=CA Date: 2018.01.27.10.52:32-06'00'	
Title Chief Engineer		Date (YYYY-N	/M- DD) 2018-	01-27	
Email address BartlettCE@ccgs-ngcc.gc.ca					
Investigators comments					
Surprising positive test result for asbestos in an app this mineral. Wire and wire wrap (jacket) look to be decision on course of action.	lication that in good con	would not bene dition. Awaiting	efit from the once thought g test results of the surrou	of advantages of using unding dust to make	
L. Workplace OHS Committee / Health and Safety		-	```		
Workplace OHS Committee Member / Health and Sa			ation		
Name	Telephone	I	ignature	totally simust by Chris Courch	
Chris Couch	250.213.36	885 C	hris Couch	igitally signed by Chris Couch "Original Court Guard, ou=CCGS Bartlett, "Mail-BartlettCHO@ccgs-ngcc.gc.cat, o=CA site, 2018.01.28 10 04 58 -0800*	
Title	Email addr	ess	Date (YYYY-MM-DD)		
Chief Officer	BartlettCH	O@ccgs-ngcc.	gc.ca	2018-01-28	
Workplace OHS Committee Member/Health and Sat	fety Represe	entative comme	ents		
During this patrol's OHS Meeting, we will review the of asbestos containing materials (ACM). We will als Concur with this report, and nothing further to add.					
M. Commanding Officer or Superintendent/Manag	jer (Require	ed)			
Name of Commanding Officer / Responsible Manage	er Teleph	one#	Signature		
Michael McCullagh	250-88	2-3864	Michael McCullagh	Digitally signed by Nichael NoCullagh DN: or=Nichael NoCullagh, o=Canadian Coast Guard Fleet, ou=CCSS Bartlett, enal≈BartlettCO@bar.cogs-ngoc.gc.ca, o≈C/ Date: 2018.01.28 10.09.41 -08'00'	
Title	Email a	address		Date (YYYY-MM-DD)	
Commanding Officer	Bartlet	CO@ccgs-ngc	c.gc.ca	2018-01-28	
Has the relevant task(s) on the Site Specific Risk Registe	r been reviev	ved and/or modi	fied as a result of the incide	nt? ⊠Yes ⊡No	
Additional comments to include additions, deletions	or changes	to corrective ac	tion recommendations fro	om Section "J"	
Asbestos Management plan updated to reflect ACM Concur with proposed Corrective & Preventative Medical Concur with proposed Corrective & Preventative Medical Concurrence (Inc.)		nsuls.			
			managaran (ip)		

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the <u>Privacy Act</u> and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: <u>DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca</u>.



FP_5234_E 2017-11 Prepared for: Canadian Coast Guard Services

CCGS BARTLETT

Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments Limited Hazardous Materials

Issue date: February 2, 2018 Project: 34699 RA1 V1.0



201 - 415 Gorge Road East

Victoria, BC

V8T 2W1

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Contents		1.7	1.2	1.3	4.	1.5	9.			Appendix A. Analytical Reports
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1 Background and Scope of Work

(LHMA) in accordance with WorkSafeBC regulatory requirements outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 - Hazardous North West Environmental Group Ltd. (NWest) was retained by the Canadian Coast Guard (CCG, the Client) to conduct a limited hazardous materials assessment on January 26, 2018. Materials. The LHMA was conducted by NWest representative

Room in all accessible areas, excluding behind the washers and dryers due to inaccessibility at the time. As assessment of the dust in these two areas identified the Various areas were found to have asbestos-containing cables. The presence of these cables triggered an assessment of latent dust in Wheelhouse console casings. Concurrently, damage to an asbestos-containing bulkhead panel was identified by CCG crew in the Laundry Room. An abatement contractor cleaned the Laundry presence of asbestos fibres in excess of expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories

The scope of work was provided as follows in the request for quote with additional details provided to the attending technician at the time of this assessment.

efforts behind the washers and dryers. Asbestos in latent dust in the Wheelhouse consoles fell in the high range (>100,000 s/cm²). It is suspected that the asbestos is Asbestos in latent dust in the Laundry room fell in the moderate range (>10,000 to 100,000 structures per square centimetre (s/cm²), warranting additional cleaning a result of pulling asbestos-containing cabling throughout the years.

Note that there is no accepted, standardized method of determining the mobility of asbestos fibres from latent dust into the air. The rate of mobility is dependent on various factors. The main factor for mobility on the vessel is vibration and movement during normal at-sea operations, therefore, it has been deemed prudent to remove all loosely adhered and safe to access dust from these areas.

Bulk sampling was undertaken of stored gasket materials in the Machinery Control Room Stores (MCR Stores). Chrysotile asbestos was identified in rope gasket/packing materials. These materials have been stored exposed in the MCR Stores for an unknown length of time. The following document presents a risk assessment and provides safe work procedures for removing asbestos-containing dust from the following locations:

- Wheelhouse and consoles.
- Laundry Room, specifically behind the washers and dryers.
- Void space beneath the Wheelhouse.
- 4 5

Risk assessments and general procedures are based on our understanding of the scope of work and the methods and means intended to be used by the Abatement Contractor. Should the work activity type differ from what is noted herein, a new risk assessment may be required for that activity.



34699 RA1 V1.0 - CCGS Bartlett Dust Abatement

1.1 Wheelhouse and Consoles

Scope of Work

- Remove loosely adhered dust from all surfaces within all consoles.
- Clean all surfaces in the Wheelhouse.
- Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- .. Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at all Wheelhouse entrances. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- HEPA vacuum and bag curtains and other removable porous materials that will be reused. These items will be laundered prior to reuse.
- 6-mil poly drop sheet around console access to prevent entrainment of dust into the carpet.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within consoles. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum and wipe all surfaces within the Wheelhouse to remove loosely adhered latent dust. Binders/books: only HEPA vacuum the outer surfaces. CAUTION: take care not to change any settings on the control panels.
- HEPA vacuum the carpet using a carpet head attachment.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.2 Laundry Room

Scope of Work

- Remove loosely adhered dust from all surfaces behind the washers and dryers.
- Clean all surfaces in the Laundry Room.
- Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed.

Contractor Requirements

Remove loosely adhered dust from behind washers and dryers and clean all Laundry Room surfaces

- 2. Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the Laundry Room entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- A pop-up or small enclosure may be constructed in the Alleyway outside the Laundry Room to create more work space. If used, it must not impede worker access through the Alleyway. Coordinate with CCG crew.
- Dismount the washers and dryers to access the space behind them.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces on the back sides of the units and the bulkhead and deck behind. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- NWest will conduct an inspection at this time, prior to re-installation of the units.
- Upon successful inspection, reinstall units.
- HEPA vacuum exposed surfaces of the Laundry Room (i.e. do not open millwork to clean surfaces inside as these were cleaned previously).
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake a final inspection and air clearance sampling.



1.3 Void Space Under Wheelhouse

Scope of Work

- Remove loosely adhered dust from all surfaces.
- Remove all dust and debris from deck.
- Hazards: Asbestos-containing dust. Vitreous fibres from exposed Fibreglass-type insulation. Red primer assumed to contain lead. Enclosed space with a single entrance/exit.

Contractor Requirements

Remove loosely adhered dust from all surfaces.

- Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance to the void space. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- access/egress of the space. The intent is to pull makeup air into all areas of the space, therefore, the extraction duct or NAU should be placed as far Install a certified negative air unit (NAU) to draw air out of the space. Place it in such a manner as it does not impede regular or emergency from the entrance as practicable to avoid short circuiting.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces in the space. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- Work should start from the entrance and move into the space to reduce the amount of contamination that accumulates on worker's coveralls.
- Note: additional effort may be required to remove all dust from high contact surfaces such as the deck (i.e. remove all dust, not just loosely adhered
- Due to the small volume of the work area and anticipated increased concentration of fibres rendered airborne during cleaning activities, workers must utilize **powered air purifying respirators (PAPRs)** equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



..4 MCR Console

Scope of Work

- Remove loosely adhered dust from all surfaces within the console.
- Remove loosely adhered dust from the deck behind the console and from cables running out of the console, up to the first cable tray bracket.
- equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage. Engines or other equipment Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Fragile and sensitive equipment present. Some electrical cabling and may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- . Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- 6-mil poly drop sheet around console access.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within and behind console. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum the deck around console openings.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.5 MCR Stores

Scope of Work

- Remove box containing asbestos rope gaskets/packing. Remove any visually similar materials, after confirming with CCG these additional materials can be disposed.
- Clean the shelving unit and adjacent surfaces within three feet.



Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- Moderate risk cleanup activities
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Remove identified bulk materials and place in 6 mil poly bags. Dispose as asbestos waste.
- Remove from the shelving unit each piece of equipment or material to be kept. HEPA vacuum all exterior surfaces and place in the MCR.
- When all items are removed from the shelving unit, HEPA vacuum and damp wipe the shelving unit.
- HEPA vacuum and damp wipe all surfaces behind and adjacent to the shelving unit.
- NWest will undertake an inspection for cleanliness at this time.
- Upon successful inspection, items can be replaced
- HEPA vacuum the deck.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.6 Additional Requirements

- If suspect materials are discovered during abatement activities that have not been included in this risk assessment, work must stop and the material assessed by a qualified person.
- Submit Notice of Project complete with site specific work procedures to WorkSafeBC no less than 48 hours prior to commencing work
- All HEPA vacuums and NAUs must be certified (DOP/PAO tested) within 12 months of use. Recommend on-site certification to ensure units are functioning properly after transport.



CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

- Provide occupational health and safety program including exposure control plans for asbestos, lead, vitreous fibres, and silica as well as procedures for deenergization and lockout if required.
- Provide all first aid for contractor workers.
- alternative respirator cartridges (e.g. nearby welding, chemical applications, or vehicle exhaust). For the purposes of handling the above identified hazardous Other personal protective equipment (PPE) such as safety eyewear, hard hats, or face protection may be required. Site conditions may necessitate the use of materials, all cartridges must utilize P-100 particulate filters, at minimum.
- No wet wiping, wire brushing, or application of liquids to electrical cabling.
- Contractor shall coordinate schedule around the crew's schedule including fueling events, maintenance, practice drills and any other reasonably foreseeable activity. Contractor is responsible for coordination with Chief Engineer and Chief Steward.
- All air sampling to be conducted by NWest.



CCGS BARTLETT February 2, 2018

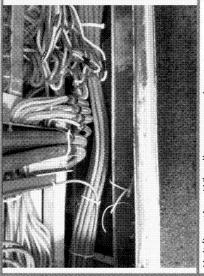
Limited Hazardous Materials Risk Assessment & Safe Work Procedures

2018 Dust Cleanup: Various Compartments

Photo Plate



Unit/Location: Wheelhouse
Description: Overview
Comments: Curtains and other porous items
meant for reuse will be HEPA vacuumed, bagged,
and laundered. HEPA vacuum and wipe all
surfaces.



Unit/Location: Wheelhouse console
Description: Overview of typical console
Comments: HEPA vacuum accessible surfaces
ed, within consoles to remove loosely adhered dust.
Do not wet/damp wipe cables.

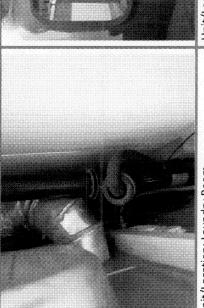


Unit/Location: Laundry Room Description: Overview Comments: Units are framed into place.



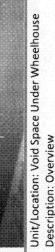
CCGS BARTLETT February 2, 2018

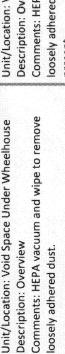


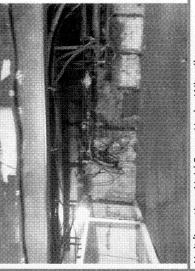


Description: Dust behind washers and dryers to be Comments: Remove units and clean backsides of Unit/Location: Laundry Room cleaned.

units and the bulkhead and deck







loosely adhered dust. Fibreglass-type insulation Comments: HEPA vacuum and wipe to remove Unit/Location: Void Space Under Wheelhouse Description: Overview present.



within consoles to remove loosely adhered dust. Comments: HEPA vacuum accessible surfaces Do not wet/damp wipe cables. Description: Overview Unit/Location: MCR within consoles to remove loosely adhered dust.

Comments: HEPA vacuum accessible surfaces

Description: Overview

Unit/Location: MCR

Do not wet/damp wipe cables.



Comments: Dispose of ACM, clean shelving and Description: Asbestos-containing rope gaskets/packing stored exposed. adjacent surfaces within 2 feet. Unit/Location: MCR Stores



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Document Released Unde Information Act / Docume



CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

Validation

occupational hygiene professionals operating in this jurisdiction. No assessment was requested or made of other potential areas of asbestos or lead contamination All work undertaken was conducted according to standardized methods and otherwise in accordance with protocols and procedures currently utilized by that may or may not be present within the vessel.

Signature on file

Signature on file

Qualified Person as per OHS Reg 6.1 Report review



CCGS BARTLETT February 2, 2018

Appendix A. Analytical Reports

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

No information has been removed or severed from this page



CCGS-NGCC, Bartlett Chief Engineer

From:

Sent:

February-03-18 10:51 PM

To:

CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject:

Bartlett Air Results - Feb 3

Attachments:

34694 AA3 V1.0 2018-02-03 - CCGS Bartlett Background Testing S#1-35.pdf

Hi Matt, additional air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected as per my earlier email and have been analyzed. As before all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

We can chat more tomorrow.

Best,



Project Manager
North West Environmental Group Ltd.

_

P. 250-384-9695 ext.

F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC , V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only. If received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.

North West Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 03, 2018

Client Job or PO#: NEED

Project number: 34694

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Comment										
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Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	0.64	5.10	3.82	2.55	3.82	3.18	4.46	4.46	16,1	7.01
Volume (L)	259.08	988.16	947.2	324.36	414.99	1718.7	442.5	481.6	1556.48	358.72
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	0.5	4.0	3.0	2.0	3.0	2.5	3.5	3.5	1.5	5.5
Time (Mins)	127	193	185	159	159	337	177	172	304	152
Time Off	14:12	14:46	14:47	14:01	13:58	16:44	13:56	13:47	16:58	14:19
Time On	12:05	11:33	11:42	11:22	11:19	11:07	10:59	10:55	11:54	11:47
Avg. Filow Rate (Ipm)	2.04	5.12	5.12	2.04	2.61	5.1	2.5	2.8	5.12	2.36
Analyst	ar	ar	ar	JD	ac	ЭD	ОС	ar	ę.	ΩC
туре*	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB
Area	Feb-02-2018 (AMB) Control Room	(AMB) Upper Deck Alley Aft	Feb-02-2018 Feb-02-2018 (AMB) Upper Deck Alley FWD	Feb-02-2018 Feb-02-2018 Oilers Aft Cabin	Feb-02-2018 (AMB) Upper Deck Winchman's Cabin	(AMB) Poop Deck Alley	(AMB) Poop Deck Logistic Officer's Cabin	(AMB) Poop Deck Lounge	(AMB) Boat Deck Alley	(AMB) Boot Deck
Date Analysed		Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018
Date Collected	Feb-02-2018	Feb-02-2018	Feb-02-2018		Feb-02-2018	Feb-02-2018	34694-9a Feb-02-2018	34694-10a Feb-02-2018	34694-11a Feb-02-2018	34694-12a Feb-02-2018
Sample No	34694-3a	34694-4a	34694-5a	34694-6a	34694-7a	34694-8a	34694-9a	34694-10a	34694-11a	34694-12a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

1/3

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Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0,01	<0.01
Density (fib/mm2)	0.00	8.28	5.73	5.10	5.73	7.01	9.55	7.64	19.11	2.55	2.55	8.92	2.55	1.27
Volume (L)	0	2006.88	1521.52	1493.52	1498.6	1496.06	1493,52	1483.36	1470.66	1483.36	1483.36	1469.16	0	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	0.0	6.5	4.5	4,0	4.5	5.5	7.5	9'9	15.0	2.0	2.0	7.0	2.0	1.0
Time (Mins)	0	148	616	588	590	589	288	584	579	584	584	583	0	0
Time Off	00:00	16:55	18:42	17:43	17:40	17:55	17:45	18:00	17:51	17:49	17:45	18:04	00:00	00:00
Time On	00:00	14:27	08:26	07:55	02:20	90:80	25:20	08:16	08:12	08:05	08:01	08:21	00:00	00:00
Avg. Flow Rate (Ipin)	0	13.56	2.47	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.52	0	0
Analyst	ЭD	ЭD	ЭD	JD	JD	Оľ	JD	Qſ	OC	ar	ar	OC	ar	Ωſ
Туре*	သု	AC	AMB	AMB	AMB	AMB	AMB	АМВ	АМВ	AMB	AMB	AMB	သ	သွ
Area	(QC) Field Blank	(AC) Poop Deck Lounge	(AMB) Boat Deck Chief Officer (Location 1)	(AMB) Boat Deck Alley (Location 2)	(AMB) Poop Deck Lounge (Location 3)	(AMB) P. Deck Logistics Officer Cabin (Location 4)	(AMB) Poop Deck Alley (Location 5)	(AMB) Upper Deck Winchman's Cabin (Location 6)	(AMB) Upper Deck Oilers Aft Cabin (Location 7)	(AMB) Upper Deck Alleyway Aft (Location 8)	(AMB) Upper Deck Alley FWD (Location 9)	(AMB) Above Tank Top Control Room (Location 10)	(QC) Field Blank	(QC) Field Blank
Date Analysed	Feb-02-2018	Feb-02-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018
Date Collected	Feb-02-2018	Feb-02-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	34694-29a Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018
Sample No	34694-13a	34694-23a	34694-24a	34694-25a	34694-26a	34694-27a	34694-28a	34694-29a	34694-30a	34694-31a	34694-32a	34694-33a	34694-34a	34694-35a

PAT PROGRAMS
AINA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

2/3



*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable,

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2) Permissible Exposure Limit (PEL) (Asbestos - All forms); 0.1 fibres/mL (unprotected persons)

Yellow

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air dearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Officer

Sent:

February 4, 2018 8:35 AM

To:

Joseph Van Der Sande; John Benckhuysen;

Subject:

FW: Bartlett Air Results - Feb 3

Attachments:

34694 AA3 V1.0 2018-02-03 - CCGS Bartlett Background Testing S#1-35.pdf

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: February-04-18 8:05 AM

To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer

Subject: FW: Bartlett Air Results - Feb 3

Matt Jackson Chief Engineer CCGS Bartlett Cell:

BartlettCE@ccgs-ngcc.gc.ca

From:

Sent: February-03-18 10:51 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject: Bartlett Air Results - Feb 3

Hi Matt, additional air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected as per my earlier email and have been analyzed. As before all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

We can chat more tomorrow.

Best,



Project Manager
North West Environmental Group Ltd.

C.

P. 250-384-9695 ext.

F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only. If received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.



Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 01, 2018

Client Job or PO#: NEED Project number: 34694

Comments % 2 2 Other Materials Cellulose (30%) Synthetic (10%) Non-Fibrous (30%) Synthetic (50%) Non-Fibrous (20%) % 30 30 Asbestos Chrysotile Chrysotile 100 100 % Phase White / Black Rope Gasket (~1.5cm) | White / Grey Wiring - Black, ~1cm Description Analyst Б 쫎 Date Analysed Feb-01-2018 Feb-01-2018 Location **Engine Room** MCR Stores Sample No 34694-1b 34694-2b

PAT PROGRAMS.

AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

7



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust Rev #5, 1/31/2018

Project:

CCGS Bartlett Wheelhouse Console Asbestos

Testing

Project No.: 34651

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6435034

Client No.: 34651-6b

Location: WH Fire Panel Console FWD

Area (cm2): 100

Density (s/mm²): 1260

Concentration (s/cm²): 6040000

Asbestos Type(s): Chrysotile Amosite Anthophyllite

Lab No.:6435035

Client No.: 34651-7b

Location: WH Fire Panel Console AFT

Area (cm2): 100

Density (s/mm²): 1040

Concentration (s/cm²): 9990000

Asbestos Type(s): Chrysotile Amosite

Lab No.:6435036

Client No.: 34651-8b

Location: WH FWD Stbd Console

Area (cm2): 100

Density (s/mm²): 76.9

Concentration (s/cm²): 370000

Asbestos Type(s): Chrysotile

Lab No.: 6435037 Client No.:34651-9b

Location: WH Batch Blank

Area (cm²): Blank

Density (s/mm²): <7.69

Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Lab No.: 6435038

Client No.: 34651-10b

Location: WH Process Blank

Area (cm²): Blank **Density (s/mm²): 7.69** Concentration (s/cm²): NA Asbestos Type(s): Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

ate Analyzed:

Signature: Analyst:

1/31/2018 01/31/2018 Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 1/31/2018 5:48:16

Page 1 of 3



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date:

1/31/2018

201 - 415 Gorge Road East Victoria BC V8T 2W1

Report No.:

556406 - TEM Dust Wipe

Project:

CCGS Bartlett Wheelhouse Console

Asbestos Testing

Project No.:

34651

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

eneral information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir r Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, ample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

1)Note: Sample not analyzed.

)Note: Sample not analyzed at request of client.

3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 1/31/2018 5:48:16



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: 1/31/2018

201 - 415 Gorge Road East

Report No.: 556406 - TEM Dust Wipe

Victoria BC V8T 2W1

Project: CCGS Bartlett Wheelhouse Console

Asbestos Testing

Project No.: 34651

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13) Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.:

556406 - TEM Dust

Rev #5, 1/31/2018

Wipe

Project:

CCGS Bartlett Wheelhouse Console Asbestos

Testing

34651 Project No.:

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435034 Client No.: 34651-6b

Volume Filtered (mL):0.1 Dilution Factor (mL):50

Grid Openings:3

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0390

Detection Limit (s/cm²): 123000

Sensitivity (s/mm²):25.6

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6435035 ient No.:34651-7b

Volume Filtered (mL):0.05 Dilution Factor (mL):50

Grid Openings:2 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0260 Sensitivity (s/mm²):38.5

Detection Limit (s/cm²):370000

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: WH Fire Panel Console FWD

Asbestos Structures: 49

Structures < 5 Microns: 44 Structures ≥ 5 µm: 5

Structure Density (s/mm²): 1260

Structure Concentration (s/cm²): 6040000

Asbestos Type(s):

Chrysotile Amosite Anthophyllite

Area Sampled (cm²):100

Location: WH Fire Panel Console AFT

Asbestos Structures: 27

Structures < 5 Microns: 22 Structures ≥ 5 µm: 5

Structure Density (s/mm²): 1040

Structure Concentration (s/cm²): 9990000

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<25.6

Structure Concentration (s/cm²):<123000

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<38.5

Structure Concentration (s/cm²):<370000

Non-Asbestos Type(s):

None Detected

Please refer t	o the Preface	of this renor	t for further	information	regarding your	analysis
I lease leter t	o uic i iciacc	or ans repor	t for rundici	momadu	rogarding your	analy sis.

Date Received:

1/31/2018

ate Analyzed: Signature:

Analyst:

01/31/2018

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

V8T 2W1

Report Date:

1/31/2018

556406 - TEM Dust

201 - 415 Gorge Road East

BC

Report No.:

Wipe

Rev #5, 1/31/2018

Project:

CCGS Bartlett Wheelhouse Console Asbestos

Testing 34651

Client: NOR765

Victoria

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435036

Area Sampled (cm²):100

Filter Type:MCE Filter Size (mm²):962

Client No.: 34651-8b

Location: WH FWD Stbd Console

Pore Size (µm):0.45

Volume Filtered (mL):0.1 Dilution Factor (mL):50

Asbestos Structures: 4

Non-Asbestos Structures: None Detected

Grid Openings:4

Structures < 5 Microns: 2

Structure Density (s/mm²):<19.2

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Structures $\geq 5 \mu m$: 2 Structure Density (s/mm²): 76.9 Structure Concentration (s/cm²):<92500

Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):92500 Structure Concentration (s/cm²): 370000 Asbestos Type(s):

Non-Asbestos Type(s): None Detected

Chrysotile

Micrograph Number: **EDXA Spectrum ID:**

> Area Sampled (cm²):Blank Location: WH Batch Blank

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Lab No.:6435037 lient No.:34651-9b

Asbestos Structures: None Detected

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Volume Filtered (mL):7 Dilution Factor (mL):50 Grid Openings: 10

Structures < 5 Microns: None Detected

Structure Concentration (s/cm²): NA

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤7.69

Structure Concentration (s/cm²):NA Non-Asbestos Type(s): None Detected

Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):NA

Opening Area (mm²):0.013

Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

ate Analyzed:

01/31/2018

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Signature: Analyst:

Dated: 1/31/2018 5:48:16

Page 2 of 4



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust

Rev #5, 1/31/2018

Wipe

Project: CCGS Bartlett Wheelhouse Console Asbestos

Testing

Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435038 Client No.:34651-10b

Volume Filtered (mL):7 Dilution Factor (mL):50 Grid Openings:10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):Blank Location:WH Process Blank

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s):

Amosite

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018 01/31/2018

ate Analyzed: Signature:

Analyst:

Dated: 1/31/2018 5:48:16

Approved By:

Fre Ena fel

Frank E. Ehrenfeld, III Laboratory Director



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 5564

556406 - TEM Dust Wipe

Project:

CCGS Bartlett Wheelhouse Console

Asbestos Testing

Project No.: 34651



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett Laundry Room Insp and Clearances

Date: January 30, 2018

Client Job or PO#: NEED

Project number: 34659

at				
Comme				
LOQ	v	٧		
v/vv	W	٨		
Concen. (fib/mL)	<0.01 W	<0.01 W <	<0.01	<0.01
Time Time Time # # Volume Density Concen. v/vv LOQ Comment On Off (Mins) Fibres Fields (L) (fib/mm2) (fib/mL)	2.55	6.37	00.00	00'0
Volume (L)	2781	2781	0	0
# Fields	100	100	100	100
# Fibres	2.0	2.0	0.0	0.0
Time (Mins)	15.45 08:35 11:35 180	15.45 08:35 11:35 180	0 00:00 00:00	0 00:00 00:00
Time Off	11:35	11:35	00:00	00:00
Time On	08:35	08:35	00:00	00:00
Avg. Flow Rate (tpm)	15.45	15.45	0	0
Type* Analyst Avg. Flow Rate (lpm)	QΓ	QΓ	ac	OC
Type*	A C	A C	ည	သွ
Area	(AC1) Sink	34659-2a Jan-30-2018 Jan-30-2018 (AC2) Entrance	34659-3a Jan-30-2018 Jan-30-2018 (QC) Process Blank	34659-4a Jan-30-2018 Jan-30-2018 (QC) Batch Blank
Date Analysed	34659-1a Jan-30-2018 Jan-30-2018 (AC1) Sink	Jan-30-2018	Jan-30-2018	Jan-30-2018
Date Collected	Jan-30-2018	Jan-30-2018	Jan-30-2018	Jan-30-2018
Sample No	34659-1a	34659-2a	34659-3a	34659-4a

AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS PAT As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

PROGRAMS

LAB# 202314

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC – occupational: sample collected on a worker within the work area, Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2) OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow Indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air dearance limit (for blanks, indicates possible media contamination)

AINA PROFICIENCY ANALYTICAL TESTING PROGRAMS 5 As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

LAB# 202314





9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BCV8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust

Wipe

Project:

CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6435039 Client No.:34659-1b Location: Laundry Behind Washer

Area (cm²): 100

Density (s/mm²): 61.5

Concentration (s/cm²): 14800

Asbestos Type(s): Chrysotile Amosite

Lab No.:6435040 Client No.:34659-2b Location: (QC) Process Blank

Area (cm²): Blank Density (s/mm²): <7.69 Concentration (s/cm²): NA Asbestos Type(s): None Detected

Lab No.:6435041 Client No.: 34659-3b Location: (QC) Batch Blank

Area (cm2): Blank Density (s/mm²): <7.69 Concentration (s/cm²): NA Asbestos Type(s): None Detected

> Frank E. Ehrenfeld, III Laboratory Director

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

ate Analyzed:

01/31/2018

Signature: Analyst:

Dated: 1/31/2018 2:54:39

Approved By:

Page 1 of 3

s.19(1)



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust Wipe

CCGS Bartlett Laundry Room Insp And

Project No.: 34659

Project:

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir r Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, ample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability, iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

1)Note: Sample not analyzed.

Note: Sample not analyzed at request of client.

3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 1/31/2018 2:54:39



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: 1/31/2018

201 - 415 Gorge Road East

Report No.: 556407 - TEM Dust Wipe

Victoria BC V8T 2W1

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

s.19(1)



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust

Wipe

Project:

CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435039 Client No.: 34659-1b

Client: NOR765

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings: 10 Opening Area (mm²):0.013

Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²): 1850

Micrograph Number:

EDXA Spectrum ID: 12:42:33PM

Lab No.:6435040 lient No.:34659-2b

Volume Filtered (mL):7 Dilution Factor (mL):50 **Grid Openings: 10** Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²):NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Laundry Behind Washer

Asbestos Structures: 8

Structures < 5 Microns: 7 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 61.5 Structure Concentration (s/cm²): 14800

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm²):Blank Location: (QC) Process Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: 1

Structure Density (s/mm²):7.69 Structure Concentration (s/cm²): 1850

Non-Asbestos Type(s): SiAl - Other Fiber

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

ate Analyzed:

Signature: Analyst:

1/31/2018 01/31/2018 Approved By:

Frank E. Ehrenfeld, III Laboratory Director

s.19(1)



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria V8T 2W1 \mathbf{BC}

Report Date: 1/31/2018

Report No .: 556407 - TEM Dust

Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435041 Client No.:34659-3b

Client: NOR765

Volume Filtered (mL):7 Dilution Factor (mL):50 **Grid Openings: 10**

· Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 ' Detection Limit (s/cm²):NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):Blank Location: (QC) Batch Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

ate Analyzed: Signature:

Dated: 1/31/2018 2:54:39

Analyst:

01/31/2018

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

Project: 10603

Location: 21 Huron St, Victoria, BC, Bartlett

Client: Quantum Murray LP

201 - 990 Hillside Avenue Victoria, B.C. V8T 2A1 Tel: 778-406-0933 E-Mail: admin@islandehs.ca

Permissible Exposure Limit:

Seriol Officer Cabili area offwall removal off permitters			0.001	5.10	2363	4.0 100 15.75 2363	100	4.0	150	15.5	HD 16.0 15.5	욷	AC	25-May-16 Work area	25-May-16	9
* ** Senior Officer Cabin after drywall removal on perimeter	**	*														
wall			0.002	10.83	2325	100 15.50 2325	100	8.5	150	15.0	16.0	욷	AC A	25-May-16 Work area	25-May-16	2
Senior Officer Cabin after drywall removal on perimeter	**														:	,
Augusto (PAPR) during drywall removal			14.184	2302.55	63	2,50 63	20	361.5	25	2.5	2.5	모	ပ္ပ	Work area	25-May-16	4
removal In Senio Officer Cabin			0.002	4,46	666	2.35	3.5 100	3.5	425	2,3	2.4	呈	AMB	25-May-16 containment	25-May-16	3
Ambient sample outside containment during drywall	*	*												Outside		1
Cabin			0.004	10.83	1027	2.40 1027	8.5 100	8.5	428	2.4 2.4	2.4	욷	ర	25-May-16 Clean room	25-May-16	2
Clean room during drywall removal in Senior Officer	**															
Field blank	*	*	0.000	0.00	0	0.00	100	0				욷	BLK	Blank	25-May-16	-
Comments	P 001	100	(rib/mt) LOD LOQ	(fib/mm2)	(1)	Rate	Fibres Fields	Fibres	Time	Final	Initial	Type* Analyst Initial	Type*	Area	Collected	Sample #
			Conc.	Density	Vol.	Flow	#	#		Flow	Flow				Date	
						Avg.										
U.1 fibres/ml. (unprotected persons)	-				-			-								

*Legend

CR - clean room

OCC - occupational AMB - ambient

AC - air clearance FB - Field Blank

2 of 2



Project: 10603

Location: 21 Huron St, Victoria, BC, Bartlett Client: Quantum Murray LP

201 - 990 Hillside Avenue Victoria, B.C. V8T 2A1 Tel: 778-406-0933 E-Mail: admin@islandehs.ca

Permissible Exposure Limit:

0.1 fibres/mL (unprotected persons)

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Avg.	Flow	Rate
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	#	Fibres
		Time
	Flow	Final
	Flow	Initial
		Analyst
		Type*
		Area
	Date	Collected
		Sample #

North West Environmental Group Ltd.

Victoria, B.C. V8T 4N4 Unit 210 - 2950 Douglas Street

Tel: 250-384-9695 Fax: 250-384-9865

e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Air Sample Report

Client: Canadian Coast Guard - Sidney

Contractor: Canadian Coast Guard - Sidney

Project: Bartlett HEPA vac DOP and MCR lagging

Date: May 30, 2012

Client Job or PO#: F1782-120108

Project number: 17559

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Electrical Workshop May-30-2012 May-30-2012 Off Machinery Control OCC Way-30-2012 Room
May-30-2012
May-30-2012
17559-2

*Legend and Explanation of Terms

CR - dean room: sample collected in the first room of the 3-stage decontamination chamber also known as "the dean room". Must not exceed 0.1 fibres per mi

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed 50% of 0.1 fibres per ml x the protection factor of respirator in use by the worker.

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit: 0.1 fibres/mL (unprotected persons)

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:	CCGS-NGCC, Bartlett Captain
Sent:	February 9, 2018 1:41 PM
To:	'roc3@pac.dfo-mpo.gc.ca'
Cc:	COR; CCGS-NGCC, Bartlett Chief Officer; 'rocsupt@dfo-mpo.gc.ca

Subject: FW: ACM bulkhead seam maintenance **Attachments:** ACM Bulkhead Seam.jpg

Kevin;

See below.

We have some asbestos panelling cracks to repair.

I intend to secure Victoria Base after air tests completed at ~ 18:00.

We will need 2 hours to affect the crack caulking.

I will depart Victoria Base at approx. 20:00 for the west Coast.

That will put us entering the Southern SAR zone at Amphitrite Point to release HMCS Nanaimo tomorrow at approx. 05:00.

Please advise HMCS Nanaimo and ask when and where she wants to transfer our Rescue Specialist. (We can affect transfer with Bartlett-1)

Captain Mike McCullagh
Commanding Officer, CCGS Bartlett
Email: BartlettCO@bar.ccgs-ngcc.gc.ca

Cell: Tellular:

Victoria CG Base Landline: 250.480.2692

Irridium Voice: Irridium Data:

Mailing Address:

25 Huron Street Victoria BC V8V 4V9

Gavernment of Canada

Gouvernement
du Canada

Canadã

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: February-09-18 12:53 PM **To:** CCGS-NGCC, Bartlett Captain

Subject: FW: ACM bulkhead seam maintenance

Hi Captain,

Can we have a few hours alongside this evening to seal a the splits in the sealing caulk found by the deck crew this morning? Following recommendation below.

Matt Jackson Chief Engineer CCGS Bartlett
Cell:
BartlettCE@ccgs-ngcc.gc.ca

Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information. s.19(1)

From:

Sent: February-09-18 12:35 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject: RE: ACM bulkhead seam maintenance

Hi Matt, yes, any damage should be sealed. In addition, you should use your HEPA vacuum to clean surfaces immediately beneath such damage. The worker(s) doing the repair and vacuum work should wear a half-face respirator and have been fit tested within the last year and be clean shaven. _____ can do fit tests if needed, if he has the irritant smoke with him today. If not, we can do fit tests over the weekend.



North West Environmental Group Ltd.

C. (Primary)

P. 250-384-9695 ext. F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only. If received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: February 9, 2018 12:27 PM

To:

Subject: ACM bulkhead seam maintenance

Hi.

During our sea trial this morning our deck crew made a thorough inspection of our ACM bulkheads onboard. They noticed a few gaps/splits in the sealing caulk on some of the panel seams (see attached picture). Would you recommend resealing with a bead of silicone caulking?

Thanks

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca



CCGS-NGCC, Bartlett Chief Engineer

From:

Sent: February-09-18 9:40 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject:

Bartlett air results Feb 9

Attachments:

34741 AA1 V1.0 2018-02-09 - CCGS Bartlett Air Monitoring at Sea S#1-13.pdf

Hi Matt, please find attached the lab results from today's at sea testing. We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits.

Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer.

Please let me know if you have any questions.

Best,

Get Outlook for iOS



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865

e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Air Monitoring At Sea

2

Date: February 09, 2018

Client Job or PO#: BARTLETT

Project number: 34741

Comment Density Concen. v/vv LOQ (flb/mm2) (flb/mL) ٧ v v ٧ ٧ ≷ ≷ ≷ > ≥ > > > > <0.01 <0.01 <0.01 <0.01 <0,01 <0,01 <0.01 <0.01 <0.01 3.18 12,10 10.19 11.46 12,10 7,01 6.37 3.82 5.73 1453.5 1459.2 1459.2 1459.2 1459.2 Volume 1474,56 1482,24 1469.44 1459.2 3 100 100 100 100 100 100 100 100 100 # Fields # Fibres 5.5 9.0 9.5 4,5 2.5 8.0 5.0 9.5 3.0 Time (Mins) 570 570 570 576 573 570 570 574 570 Time O# 17:28 17:44 17:48 18:10 17:11 17:35 17:39 17:55 18:02 08:18 Time On a 08:14 07:52 08:25 08:32 08:40 07:41 07:56 08:05 Avg. Flow Rate (Ipm) 2.55 2,56 2.56 2.56 2.56 2.56 2.56 2.56 2.56 Type* Analyst 9 Ы Ы Я Д 유 Д Э 유 AMB AMB AMB AMB AMB AMB AMB AMB AMB Feb-09-2018 Feb-09-2018 (AMB) Boat Deck: Chief Officer's Cabin Feb-09-2018 Feb-09-2018 Alley FWD Feb-09-2018 Feb-09-2018 Alley AFT Feb-09-2018 Feb-09-2018 Alley Adjacent to Feb-09-2018 Feb-09-2018 (AMB) Poop Deck Alley (Location 5) Feb-09-2018 Feb-09-2018 Winchman's Cabin (AMB) Poop Deck Feb-09-2018 Feb-09-2018 Logistics Officer's Feb-09-2018 Feb-09-2018 (AMB) Boat Deck Area Crew Lounge Olfer Cabin Feb-09-2018 Date Analysed Date Collected Feb-09-2018 34741-9a 34741-1a 34741-2a 34741-4a 34741-8a 34741-5a 34741-6a 34741-7a 34741-3a Sample

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



≥

<0.01

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1470.6

100

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08:45

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AMB

(AMB) Engine Deck: Control Room

Feb-09-2018 Feb-09-2018

34741-10a

1/2

LAB# 202314

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34741-13a F	eb-09-2018	Feb-09-2018	34741-13a Feb-09-2018 Feb-09-2018 (QC) Field Blank	သ	Ą	0	00:00	00:00	0	0.0	100	O	00'0	<0.01			

*Legend and Explanation of Terms

CR - clean room; sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance; collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance,

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

>

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

s.19(1)9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust

Wipe

Project:

CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6441938

Client: NOR765

Client No.: 34694-23b

Location: Engine Rm Deck-Engine Rm, Stbd

Engine (A)

Area (cm2): 100 Density (s/mm²): 12.8 Concentration (s/cm²): 881

Asbestos Type(s): Chrysotile

Lab No.:6441939

Client No.: 34694-24b

Location: Engine Rm Deck-ER Btwn

Toolboxes, Aft (B) Area (cm2): 100

Concentration (s/cm²): <1850 Asbestos Type(s): None Detected

Density (s/mm²): <7.69

Lab No.:6441940

lient No.:34694-25b

Location: Engine Rm Deck-Behind Wellxtrol

Tank, Port (C) Area (cm2): 100 Density (s/mm²): 173 Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile

Lab No.:6441941

Client No.: 34694-26b

Location: Engine Rm Deck-ER Top Of Service Concentration (s/cm²): <617

Tank (D)

Area (cm2): 100 Density (s/mm²): <19.2

Asbestos Type(s): None Detected

Lab No.:6441942

Client No.: 34694-27b

Location: Engine Rm Deck-MCR Top Of

Console (E) Area (cm²): 100 Density (s/mm²): 897 Concentration (s/cm²): 28800

Asbestos Type(s): Chrysotile

Lab No.:6441943 Client No.: 34694-28b Location: Poop Deck-Recirculation Vent (F)

Area (cm2): 100 Density (s/mm²): <7.69

Concentration (s/cm²): <37000 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

2/9/2018

ate Analyzed:

02/09/2018

Signature: Analyst:

Dated: 2/9/2018 4:42:18

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



Information Act / Document divulgué en ve de la L. 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust

Wipe

Project:

CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6441944 Client No.:34694-29b Location: Engine Rm Deck-Engine Rm, Field

Blank (G)

Area (cm²): 100

Density (s/mm²): <15.4

Concentration (s/cm²): <1060
Ashestos Type(s): None Detected

Asbestos Type(s): None Detected

Lab No.:6441945 Client No.:34694-30b Location: Engine Rm Deck-Engine Rm, Process Concentration (s/cm²): <881

Blank (H)

Area (cm2): 100

Density (s/mm²): <12.8

Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

2/9/2018

ate Analyzed:

02/09/2018

Signature:

Analyst:

Dated: 2/9/2018 4:42:19

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

1ATL NTERNATIONAL 9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust Wipe

Project:

CCGS Bartlett: Background Testing

Project No.: 34694

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in Jur Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 2/9/2018 4:42:19



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust Wipe

Project: CCGS Bartlett: Background Testing

Project No.: 34694

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8) Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13) Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



de la la 9000 Commerce Parkway Suite B

Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

2/9/2018 Report Date:

> Report No.: 557124 - TEM Dust

> > Wipe

Project:

CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6441938 Client No.: 34694-23b

Volume Filtered (mL):7 Dilution Factor (mL):50

Grid Openings:6

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0780 Sensitivity (s/mm²): 12.8 Detection Limit (s/cm²):881

Engine (A)

Area Sampled (cm²):100

Location: Engine Rm Deck-Engine Rm, Stbd

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 12.8

Structure Concentration (s/cm²): 881 Asbestos Type(s):

Chrysotile

Filter Type:MCE Filter Size (mm²):962 Pore Size (um):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<12.8 Structure Concentration (s/cm²):<881

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6441939 lient No.:34694-24b

Volume Filtered (mL):2 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):1850

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Engine Rm Deck-ER Btwn Toolboxes, Filter Size (mm²):962

Aft (B)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): <1850

Asbestos Type(s): None Detected

Filter Type: MCE Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<1850

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

2/9/2018

ate Analyzed:

02/09/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 2/9/2018 4:42:19

Page 1 of 5

NTERNATIONAL No. 65 NS ESSANG LUBOS A UNITS de la L 9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust

Wipe

Project: (

CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6441940

Client No.:34694-25b

Volume Filtered (mL): 1.5 Dilution Factor (mL): 50

Grid Openings: 4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):6170

Area Sampled (cm²):100

Location: Engine Rm Deck-Behind Wellxtrol

Tank, Port (C)

Asbestos Structures: 9

Structures < 5 Microns: 9

Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 173

Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Chrysotile

Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²):<6170

Non-Asbestos Type(s): None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6441941

jient No.:34694-26b

Volume Filtered (mL): 15 Dilution Factor (mL): 50 Grid Openings: 4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):617

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Engine Rm Deck-ER Top Of Service

Tank (D)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <617

Asbestos Type(s): None Detected Filter Type:MCE Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

ate Analyzed:

2/9/2018 02/09/2018

Signature: Analyst:

Dated: 2/9/2018 4:42:19

Approved By:

Trak the for

Frank E. Ehrenfeld, III Laboratory Director



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust

Wipe

Project:

CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS DETAILS

Location: Engine Rm Deck-MCR Top Of

Lab No.:6441942

Client No.: 34694-27b

Volume Filtered (mL):15 Dilution Factor (mL):50

Grid Openings:3

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0390 Sensitivity (s/mm²):25.6

Detection Limit (s/cm²):822

Asbestos Structures: 35

Area Sampled (cm²):100

Structures < 5 Microns: 29 Structures > 5 um: 6

Structure Density (s/mm²): 897

Structure Concentration (s/cm²): 28800 Asbestos Type(s):

Chrysotile

Console (E)

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<25.6 Structure Concentration (s/cm²):<822

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6441943 lient No.:34694-28b

Volume Filtered (mL):0.1 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):37000

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Poop Deck-Recirculation Vent (F)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69

Structure Concentration (s/cm²): <37000 Asbestos Type(s):

Page 3 of 5

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<37000

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

ate Analyzed:

Signature: Analyst:

2/9/2018 02/09/2018

Dated: 2/9/2018 4:42:19

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



TERNATIONAL aston 1881 da Livada aterras 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054

> Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust

Project:

CCGS Bartlett: Background Testing

Project No.: 34694

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6441944

Client No.: 34694-29b

Volume Filtered (mL):7 Dilution Factor (mL):50

Grid Openings:5 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0650 Sensitivity (s/mm²):15.4

Detection Limit (s/cm²): 1060

Area Sampled (cm²):100

Location: Engine Rm Deck-Engine Rm, Field

Blank (G)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <15.4

Asbestos Type(s):

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Concentration (s/cm²): ≤1060

None Detected

Structure Density (s/mm²):<15.4

Structure Concentration (s/cm²):<1060

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6441945 lient No.:34694-30b

Volume Filtered (mL):7 Dilution Factor (mL):50

Grid Openings:6

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0780 Sensitivity (s/mm²): 12.8 Detection Limit (s/cm²):881

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Engine Rm Deck-Engine Rm, Process

Blank (H)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <12.8 Structure Concentration (s/cm²): <881

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<12.8 Structure Concentration (s/cm²):<881

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

ate Analyzed:

2/9/2018 02/09/2018

Signature: Analyst:

Dated: 2/9/2018 4:42:19

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 4 of 5



de la L 9000 Commerce Parkway Suite B

Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 2/9/2018

Report No.: 557124 - TEM Dust Wipe

Project:

CCGS Bartlett: Background Testing

Project No.: 34694

Dated: 2/9/2018 4:42:19

Victoria, B.C. V8T 2W1





February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard

25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Wheelhouse and Consoles 25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 4-5 2018	
Address of the abatement	CCGS Bartlett – Wheelhouse and Consoles	
project	25 Huron Street, Victoria BC	
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd	
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"	·

Contractor Scope of Work:

Remove asbestos-containing dust from all accessible surfaces within all consoles. Clean all exposed surfaces in the Wheelhouse. Moderate risk clean-up of dusty surfaces.

NOTE 1: the intent of this work was not to remove all observable dust, but to remove all accessible, loosely adhered gross contamination from within the consoles and to clean all surfaces in the Wheelhouse in order to reduce the amount of loose material that may be rendered airborne during normal vessel operations. Abatement workers were required to gently vacuum cables and electrical components within the consoles; they were not permitted to handle cables beyond this to remove concealed dust.

NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.



NWest Project Number: 34699 Date: February 8, 2018

Photo Plate



Photo of NOPA posted on work site.



Example of dust cleaned from a console.



Example of dust removed from a console.



Example of cleaned surfaces in the Wheelhouse



Photo of sampling location.



Photo of sampling location.

Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Kyle Ostman, Technologist

Asbestos-containing cables were discovered in the Wheelhouse consoles, triggering NWest to assess the latent dust. NWest collected surface wipe samples and found the dust to contain asbestos. The consoles are regularly accessed and are open to the Wheelhouse (i.e. share an air space), therefore, cleaning of the consoles was undertaken to reduce the risk of fibres becoming airborne during normal vessel operations.

NWest conducted a Final Visual Inspection and clearance sampling. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Worker breathing zone (Occupational) samples and Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities which have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).

WorkSafeBC has determined that $1/5^{th}$ of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.



Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699 Date: February 8, 2018

Name and signature of the consultant who collected the		
air clearance samples	Technologist	
Reviewed by		



Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX A – Field Reports

No information has been removed or severed from this page



ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

North West

ASBESTOS ABATEMENT CHECKLIST
FINAL VISUAL INSPECTION CHECKLIST
(FOR USE BY THE INDUSTRIAL HYGIENIST)

T 1							
Date: Leb 6	,2018	Time: 0910	Co	ontractor: Gasa Hers	int	_]	Inspector: K.O.
Site:			R	esent at Inspection	n: Kd Ha in	2 () rat),	julest)
Project:	8ar/btt	Pust Abate	mut su	bmitted to:			
Location:	1) Wheel 2) Laurd	house my losen	Ins	spection Report N	o.: /,	2.	
Number of Insp]1 🗆 2	2 3 4	□5		
Some und	heel how	se regined.	•	Verified to be Complete by Contractor	i	ked b ling O	y Representative of wner
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			(initial of Sup't)	Yes (Y)	No (N)	Action Taken
General							
Is all equipn	nent remove	d from area?					
is all asbesi	os within sco	ope removed?			*/		* Dust remain
All ACM Wa	ste removed	from area?					Dust remains in areas difficult to
Is area read barriers?	ly for barriers	s to be removed to	critical		* /		reach.
Is load-out, debris and v		equipment room fre	e of		/		* Pendincy AC result!
Is area read	ly for encaps	sulation?				NA	LEDA (14.
Do Negative tests?	Air Machine	es have sufficient [OP		J	NA	
Enclosure							
Negative prin.w.g.	essure (whe	re applicable) at m	in0.03			NA	
All enclosur	es intact and	properly sealed			1		
Space vacu	umed with co	ertified HEPA vacu	ium only				
Poly wiped	clean (free fr	om removable resi	idue)				5
Negative air	r machine (w	here applicable) w	iped] 	NA	1
Discharge h	oses clean a	and free of perforat	ions			NA	'
All waste re	moved from	space			/		á
Remaining to bagged	tools and equ	uipment wiped dow	vn or		Was a	NA	*
	ris: Vertical	and horizontal su	ırfaces	_			₹ 1
Window sills	s and tracks				1	ł_	1
Walls and d	oors		PROBLEM OF A SERVICE OF A SERVI		V		



Page 1 of 3

Form: IC1.V0.A-12/10/16

ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

Tops of baseboards	,	NA	
Tops of doors, hinges and frames	J,		
Door frames pockets			
Wall mounted fixtures		/	
Floors including all corners and spaces behind doors	/		



Page 2 of 3

Form: IC1.V0.A-12/10/16

ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

	SERVATIONS	RECOMMENDATIONS/ INSTRUCTIONS	DATE RECTIFIED/ INSPECTOR'S INITIALS
1.	Location: wheel hour		
	a. Upper ladge of cabinat in friend doors one refaining	· Reclear these areas. - Rectified on site	K.a.
	b. Cappets free of dust and debis. -all surfaces are dust free	•	K:0
	C .		
2.	Location: Laundon form		
	a. Area is dust + debi. +	•	KD
	b. Laundy machines have per me thread to position		KA
mag good span-oud gr	C.		
3.	Location:		
	d.		
	e.		
	f.		
4.	Location:	<u>.</u>	
	a.		
	b.		
	C.		,
u* ***			

Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX B - Analytical Results

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Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 06, 2018

Client Job or PO#: NEED

Project number: 34699

Sample No Date Collected Analysed Analysed No Area (pm) Area (pm) Time (pm) <th< th=""><th></th><th></th><th></th><th></th><th></th><th>,</th></th<>						,
Type* Analyst Flow Flow Flow (lpm) Time Flow (Mins) Time Flow (Mins) Time Flow (L) Flbres Fleids (L) Wolume (L) OCC BR 2.54 13:51 14:21 30 13.0 100 76.2 OCC BR 2.54 15:10 16:10 60 1.0 100 76.2 QC BR 0 00:00 00:00 0 0.0 152.4 QC BR 0 00:00 00:00 0 0.0 0 0 QC BR 0 00:00 00:00 0 0.0 0 0 QC BR 0 00:00 00:00 0 0.0 0 0 0 AC 1D 12:28 19:1 2.0 100 2456.26		Jason, Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse	Rob, Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse			
Type* Analyst Flow Flow Flow (lpm) Time Flow (Mins) Time Flow (Mins) Time Flow (L) Flbres Fleids (L) Wolume (L) OCC BR 2.54 13:51 14:21 30 13.0 100 76.2 OCC BR 2.54 15:10 16:10 60 1.0 100 76.2 QC BR 0 00:00 00:00 0 0.0 152.4 QC BR 0 00:00 00:00 0 0.0 0 0 QC BR 0 00:00 00:00 0 0.0 0 0 QC BR 0 00:00 00:00 0 0.0 0 0 0 AC 1D 12:28 19:1 2.0 100 2456.26	roo	v				٧
Type* Analyst Flow Flow Flow (lpm) Time Flow (Mins) Time Flow (Mins) Time Flow (L) Flbres Fleids (L) Wolume (L) OCC BR 2.54 13:51 14:21 30 13.0 100 76.2 OCC BR 2.54 15:10 16:10 60 1.0 100 76.2 QC BR 0 00:00 00:00 0 0.0 152.4 QC BR 0 00:00 00:00 0 0.0 0 0 QC BR 0 00:00 00:00 0 0.0 0 0 QC BR 0 00:00 00:00 0 0.0 0 0 0 AC 1D 12:28 19:1 2.0 100 2456.26	v/v	>	W			>
Type* Analyst Flow Flow Flow (hms) Time Flow Flow (hins) Time Flow (hins) Time Flow (hins) Flores Fleids (L) Wolume (L) OCC BR 2.54 13:51 14:21 30 13.0 100 76.2 OCC BR 2.54 15:10 16:10 60 1.0 100 76.2 QC BR 0 00:00 00:00 0 0.0 152.4 QC BR 0 00:00 00:00 0 0 0 0 QC BR 0 00:00 00:00 0 0 0 0 QC BR 0 00:00 00:00 0 0 0 0 0 AC JD 12:28 191 2.0 100 2456.26	Concen. (fib/mL)	0.084	<0.01	<0.01	<0.01	<0.01
Type* Analyst Flow Flow Flow Flow Flow Flow Flow Plow Time Onf Flow On On: On:	Density (fib/mm2)	16.56	1.27	00'0	2.55	2.55
Type* Analyst Flow Flow Flow Flow Flow Flow Flow Flow	Volume (L)	76.2		0	0	2456.26
Type* Analyst Rate (Ipim) Time Time (Mins) (pm) On Off (Mins) (pm) Off (Mins) </td <th># Fields</th> <td>100</td> <td>100</td> <td>100</td> <td>100</td> <td>100</td>	# Fields	100	100	100	100	100
Type* Analyst Flow Prov. Time Flow On Rate (Ipm) Time Time Off Cipm) OCC BR 2.54 13:51 14:21 OCC BR 2.54 15:10 16:10 QC BR 0 00:00 00:00 QC BR 0 00:00 12:28 AC JD 12:86 09:17 12:28		13.0	1.0	0.0	2.0	2.0
Type* Analyst Flow Rate (Ipm) Time On Rate (Ipm) OCC BR 2.54 13:51 OCC BR 2.54 15:10 QC BR 0 00:00 AC JD 12.86 09:17	Time (Mins)	30	09	0	0	191
Type* Analyst Flow Rate (Ipm) Time On Rate (Ipm) OCC BR 2.54 13:51 OCC BR 2.54 15:10 QC BR 0 00:00 AC JD 12.86 09:17	Time Off	14:21	16:10	00:00	00:00	12:28
OCC BR OCC BR OCC BR AC JD	Time	13:51	15:10	00:00	00:00	
	Avg. Flow Rate (ipm)	2.54	2.54	0	0	12.86
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Sample No Date Collected Collected Analysed Analysed Analysed Analysed Sep-1a Feb-04-2018 Feb-05-2018 34699-1a Feb-04-2018 Feb-05-2018 34699-3a Feb-04-2018 Feb-05-2018 34699-5a Feb-04-2018 Feb-05-2018 34699-5a Feb-06-2018 Feb-06-2018	Area	(OCC) Occupational	(OCC) Occupational	(QC) Field Blank	(QC) Field Blank	(AC1 PCM) Laundry Room on Upper Deck
Sample Date No Collected 34699-1a Feb-04-2018 34699-3a Feb-04-2018 34699-3a Feb-04-2018 34699-5a Feb-04-2018	Date Analysed	Feb-05-2018		Feb-05-2018		Feb-06-2018
34699-1a 34699-2a 34699-3a 34699-3a 34699-5a	Date Collected	Feb-04-2018	Feb-04-2018	Feb-04-2018		Feb-06-2018
	Sample	34699-1a	34699-2a	34699-38		34699-5a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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(m/mr) // (m/mr)	<0.01	<0.01	<0.01	<0.01
	1.27	3.18	9.55	5.10
	100 2456.26	0	2441.4	2441.4
* į	100	100	81	100
n 🖁	0.1	2.5	7.5	4.0
ÊÊ	191	0	195	195
ĚŠ	12:28	00:00	13:10	5 13:10
Ěδ	09:17	00:00	09:55	09:55
	12.86	0	12.52	12.52
į	Ą	Qr	Ą	A
	AC	သင	AC	AC
	34699-6a Feb-06-2018 Feb-06-2018 Room on Upper Deck	34699-9a Feb-06-2018 Feb-06-2018 (QC) Field Blank 1	34699-11a Feb-06-2018 Feb-06-2018 Wheelhouse C	34699-12a Feb-06-2018 Feb-06-2018 (AC6 PCM)
	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018
	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018
	34699-6a	34699-9a	34699-11a	34699-12a

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room", Must not exceed 0.02 fibres per mi AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0,02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unpratected persons)

Yellow indi

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air dearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

000632

201-415 Gorge Road E Victoria, B.C. V8T 2W1

Tel: 250-384-9695 Fax: 250-384-9865

E-mail: Northwest@nwest.bc.ca



February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard

25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Laundry Room 25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 5, 2018
Address of the abatement	CCGS Bartlett – Laundry Room
project	25 Huron Street, Victoria BC
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"

Contractor Scope of Work:

Remove asbestos-containing dust from all surfaces behind the washing machines and dryers. Clean all exposed surfaces in the laundry room. Moderate risk clean up of less than 5 square meters of dusty surfaces.

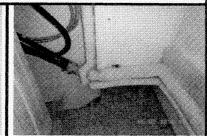
Photo Plate



Photo of entrance into the Landry Room. Popup enclosure was used to create a larger work space.



Example of dust cleaned from behind units.



Example of dust removed from the work area.



NWest Project Number: 34699 Date: February 8, 2018



Example of dust removed from the work area.



Example of Laundry Room exposed surface cleaned of dust.



Example of the deck beneath the units cleaned of dust.

Notice of Project — Asbestos	NOPA E768383				
Waste manifest documentation	BP16288-2				
Consultant that performed the final visual inspection	Brian Salmon, Technologist				

This space was originally cleaned following the discovery of a crack in the asbestos-containing bulkhead panel under the porthole. The abatement contractor cleaned all accessible surfaces, including inside cupboards following moderate risk procedures. Dust was observed behind the washers and driers, which are fastened into place, rendering this dust inaccessible. NWest conducted surface wipe sampling and found the dust to contain asbestos, warranting additional efforts to remove it.

NWest conducted a Final Visual Inspection and clearance air sampling. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities. These have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.

Laundry Room clearance samples: 34699-5 and 34699-6. Field blank: 34699-9.

Name and signature of the consultant who collected the air clearance samples	Technologist
Reviewed by	Senior Project Manager Qualified Person as per OHS Reg 6.1





ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST (FOR USE BY THE ENVIRONMENTAL CONSULTANT)

Date: Feb 5,2018				Project number: 34699				
Time on/off site:	1 1 3	(Spm	NWest represe	ntative(s):		3. Salmon		
Report number:	346		Site address/lo	cation:		355 Bartlet	.	
Weather:		Clear		Contractor	r/Repre	esentative languis	lyn i	
Client and contact	name:			Number o workers o		ment 6	•	
~Volume of Contai	nment:	Small		Number o units in us		ive air		
Work Zone Locatio	ın:	Laundry	RW					
RESULTS:			······································	ervations	and in	structions below.		
Number of Inspecti	ion (prior	to passing):]1 🔯2 🗆	3 🔲 4	□ 5			
Checked by Repres	sentative	of Building Own	er					
General				Yes (Y)	No (N)	Observations		
All equipment r	emoved	from area						
All asbestos within scope removed from the substrate				- Resociled while on-si	ra.			
All ACM Waste	removed	from containme	nt					
Area is ready fo	r barrier	s to be removed	-1			-Upan Air Claurouck		
Charked by Ransa	sentative	of Building Own	er					
amend of uchies								
Enclosure				Yes (Y)	No (N)	Observations		
Enclosure	on chamb	pers free of dust, a	Jebris and waste			Observations		
Enclosure		***************************************	debris and waste	(Y)		Observations U/A		
Enclosure Decontamination Area ready for the second seco	encapsuli	***************************************		(Y)		Observations		
Enclosure Decontamination Area ready for the Negative Air Market	encapsula achines h	ation	P tests	(Y)		Observations		
Decontamination Area ready for the Negative Air Management of the Negative pressure.	encapsula achines h ure (wher	ation ave sufficient DO	P tests	(Y)		Observations		
Decontamination Area ready for one Negative Air Managative pressures in All enclosures in	encapsula achines h ure (wher ntact and	ation ave sufficient DO re applicable) at n	P tests nin0.03 in.w.g.	(Y)		Observations		

NWEST FINAL VISUAL NSPECTION REPORT SITE ADDRESS/LOCATION:

PROJECT NUMBER: REPORT NUMBER:

Enclosure	Yes (Y)	No (N)	Obse	rvations		
Negative air machine (where applicable) wiped down			TV/			
Discharge hoses clean and free of perforations			10//	\$		
All waste removed from space						
Remaining tools and equipment wiped down or bagged						
Window sills and tracks free from debris	V					
Walls and doors free from dust and debris						
Tops of baseboards free from dust and debris						
Tops of doors, hinges and frames free from dust and debris	V					
Door frame pockets free from dust and debris	1		/~		, ,	
Wall/Ceiling mounted fixtures free from dust and debris		~	150.00	reconcilly an-situ		
Floors including scaffolding walk boards free from dust and debris		\checkmark				
Instructions for Contractor:				Contrac	tor Representative Signature:	
1 Clean corners behind pipe	2					
2. Re-wipe laund by tray an	À -	1 905				
3.						
4.						

END OF DOCUMENT



Canadian Coast Guard
CCGS Bartlett – Laundry Room

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX A - Field Reports

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Canadian Coast Guard CCGS Bartlett – Laundry Room NWest Project Number: 34699 Date: February 8, 2018

APPENDIX B -- Analytical Results

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Information Act / Documen de la Loi sur l'accès à l'info

North West Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 06, 2018

Project number: 34699

Client Job or PO#: NEED

down surfaces in cabinet and down surfaces in cabinet and Comment Apr, vacuuming and wiping wheelhouse wheelhouse consoles in consoles in vacuuming and wiping Apr, Density Concen. v/vv LOQ (fib/mm2) (fib/mL) ٧ ≷ ≷ > 0.084 <0.01 <0.01 <0.01 <0.01 16.56 1.27 0.00 2.55 2,55 76.2 152.4 0 Volume 2456.26 3 9 100 8 용 100 Fields # Fibres 13.0 0.0 2.0 9 2.0 Time (Mins) 0 191 ಜ ဖွ 0 Time Off 14:21 00:00 00:00 12:28 15:10 | 16:10 00:00 00:00 Time On 13:51 09:17 12.86 Avg. Flow Rate (ipm) 2.54 2.54 0 0 Type* Analyst 똢 딿 쯆 뚔 Я ႘ 34699-2a | Feb-04-2018 | Feb-05-2018 | (OCC) Occupational | OCC ႘ ģ, Ą (AC1 PCM) Laundry Room on Upper Deck | Feb-04-2018 | Feb-05-2018 | (OCC) Occupational 34699-4a | Feb-04-2018 | Feb-05-2018 | (QC) Field Blank 34699-3a | Feb-04-2018 | Feb-05-2018 | (QC) Field Blank Area Feb-06-2018 Date Analysed Feb-06-2018 Date Collected 34699-1a Sample No 34699-5a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site dally, to facilitate compliance with this regulation.



PROGRAMS AINA PROFICIENCY ANALYTICAL TESTING PROGRAMS PAT

LAB# 202314

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Concen. v/vv LOQ (fib/mL)	<0.01	<0.01	<0.0>	70,0>
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\$ 3	100 2456.26	0	2441,4	2441.4
* \$	100	100	100	8
* 🖁	1.0	2.5	7.5	4.0
Ě	191	0	195	195
ξŠ	12:28	00:00	13:10	13:10
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	12.86	0	12.52	12.52
* *	ę	QC	Ą	A
	AC	သု	AC	ΑC
Ž.	34699-6a Feb-06-2018 Feb-06-2018 Room on Upper Deck	34699-9a Feb-06-2018 Feb-06-2018 (QC) Field Blank 1	34699-11a Feb-06-2018 Feb-06-2018 (AC5 PCM) Wheelhouse C	34699-12a Feb-06-2018 Feb-06-2018 Wheelhouse C
	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018
	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018
	34699-6a	34699-9a	34699-11a	34699-12a

*Legend and Explanation of Terms

CR - clean room; sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable,

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air dearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation,



AIMA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Canadian Coast Guard CCGS Bartlett – Laundry Room NWest Project Number: 34699 Date: February 8, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

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Notice of Project

NOP Confirmation number:

E768383

Owner information

Account #:

Name:

Victoria Coast Guard Base

Country:

Canada

Address:

25 Huron Street

City:

Victoria

Province:

British Columbia

Postal code:

Prime contractor or employer information

Account #:

Name:

Country:

Canada

Address:

City:

Province:

British Columbia

s.19(1)

Postal code:

Person in charge of project

Name:

Job title:

Operations Manager

Email:

info@haz-mat.ca

Phone number:

(250) 891-8611 Ext:

Person completing this form

Name:

Email:

info@haz-mat.ca

Phone number:

(250) 891-8611 Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

NOP Confirmation number:

E768383

Asbestos, Lead or Other Similar Exposure Work Activity

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #:

968887

Name:

Canadian HAZ-MAT

Environmental Ltd

Country:

Canada

Address:

1111 Tulip Ave

City:

Victoria

Province:

British Columbia

Postal code:

V8Z 7Z2

Hours of work

Hours of work

from:

08:00

Consulting firms

Name(s):

Northwest Environmental

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition:

Repair:

Yes

2/1/2018

WorkSafeBC Online - Notice of Project

Hours of work to: 16:00

Number of workers per shift

Total:

3

Renovation or alteration: Encapsulation:

Activity type involving asbestos-containing material

Removal: Yes

Enclosure:

Encapsulation:

Yes

Asbestos Work Activity Level
Risk level is: Moderate

Lead project information (required only when completing a lead project)

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

2018/02/04

Other significant risk of occupational disease explanation:

NOP Confirmation number:

E768383

Project site locations

Site Location Start date

Project city

Victoria

Duration

Unit Project site location

Days

Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email:

1

prevnop@WorkSafeBC.com

(if your attachments are over 10 MB, send multiple emails or email us for further

instructions)

Fax:

604.276.3247

Mailing address:

WorkSafeBC, Prevention Division

PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone:

604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email:

prevnop@WorkSafeBC.com

Victoria, B.C. V8T 2W1



E-mail: Northwest@nwest.bc.ca



February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard

25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Void Space Under Wheelhouse 25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Collect occupational samples in personal breathing zone of workers during cleaning activities.
- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 7, 2018	
Address of the abatement	CCGS Bartlett – Void Space Under Wheelhouse	
project	25 Huron Street, Victoria BC	
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd	
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"	

Contractor Scope of Work:

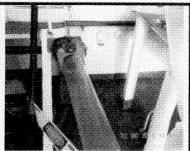
Remove asbestos-containing dust from all accessible surfaces. Remove exposed fibrous insulation. Moderate risk clean-up of dusty surfaces. Cables were not handled to remove dust concealed between cables.

NOTE: Bundled cables are not free of asbestos-containing materials or dust. Asbestos-containing cables may still be present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working with cable bundles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.

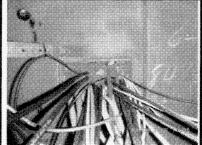


NWest Project Number: 34699 Date: February 9, 2018

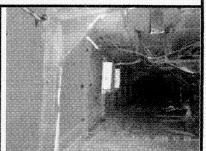
Photo Plate



Negative air unit venting to exterior of ship.



Example of dust cleaned from the surface of cables.



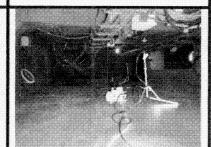
Example of dust removed from the work area.



Example of dust removed from the work area. Exposed fibrous insulation removed.



Sampling location.



Sampling location.

Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Kyle Ostman, Technologist

The presence of asbestos containing cables and dust was found in the Wheelhouse consoles. Some consoles have unsealed penetrations into the Void space, effectively sharing the same air space. Asbestos-containing cables may be present in the Void space.

NWest conducted occupational sampling, a final clearance inspection, and final visual inspection. The work was conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Occupational and Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Powered Air Purifying Respirators (PAPRs) were used during asbestos abatement activities which have a maximum use concentration of 10 fibres/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.



NWest Project Number: 34699

Date: February 9, 2018

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

Void Space air samples: Occupationals – 34699-23 and 34699-24. Air clearances – 34699-28, 29, and 31. Field blanks – 34699-27 and 34699-30.

Name and signature of the consultant who collected the air clearance samples

Technologist

Reviewed by

Senior Project Manager
Qualified Person as per OHS Reg 6.1



NWest Project Number: 34699

Date: February 9, 2018

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

APPENDIX A – Field Reports

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ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST (FOR USE BY THE ENVIRONMENTAL CONSULTANT)

Date: Ab 8						ber: 34	
Time on/off site:	73:3	70	NWest represe	entative(s):	18	<i>'</i> ∂	
Report number:	5		Site address/lo	ocation:		C63-	Harkett
Weather:			4. Sung	Contracto Name:	r/Repri	esentative	NA por on site
Client and contact	name:	009 - 124	Berlett	Number o workers o		ment	was 3
~Volume of Contai	nment:	454	0 m3	Number o units in us		ive air	
Work Zone Locatio	n:	1012.7	Ond of Mark				
RESULTS:		FAILED o	or PASSED. See obs	ervations	and i	nstruction	s below.
Number of Inspecti	ion (prior	to passing)		3 🔲 4	□ 5		
Checked by Repres	entative	of Building	Owner				
General				Yes (Y)	No (N)		Observations
All equipment r	emoved	from area					
All asbestos wit	hin scop	e removed f	rom the substrate				
All ACM Waste	removed	l from conta	inment				
Area is ready fo	r barrier	s to be remo	ved			1446	
Checked by Repres	entative	of Building	Owner				
Enclosure				Yes (Y)	No (N)		Observations
Decontamination	on chaml	pers free of o	dust, debris and waste			15200	s Jan
Area ready for	encapsul	ation				1//4	
Negative Air M	achines h	nave sufficie	nt DOP tests				
Negative pressi	ure (whe	re applicable	e) at min -0.03 in.w.g			NA	
All enclosures i	ntact and	l properly se	aled				
	altata	artified UED/	A vacanies colo				
Space vacuume	o with ci	ciuncu intr	* vacuum omy				

NWEST FINAL VISUAL NSPECTION REPORT SITE ADDRESS/LOCATION:

PROJECT NUMBER: REPORT NUMBER:

Enclosure	Yes (Y)	No (N)	Observations
Negative air machine (where applicable) wiped down			0.45/J.R.
Discharge hoses clean and free of perforations			NA, setsido
All waste removed from space			
Remaining tools and equipment wiped down or bagged			NOW IN SPARE
Window sills and tracks free from debris			NA CONTRACTOR
Walls and doors free from dust and debris			
Tops of baseboards free from dust and debris			NA
Tops of doors, hinges and frames free from dust and debris			
Door frame pockets free from dust and debris			
Wall/Ceiling mounted fixtures free from dust and debris			NA SOUTH CHARTE TO SEAL
Floors including scaffolding walk boards free from dust and debris			aires.
Instructions for Contractor:			Contractor Representativ Signature:
1. Insulation have been removed,	legis Line	udl	6
2			

END OF DOCUMENT



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Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699 Date: February 9, 2018

APPENDIX B – Analytical Results

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de la Loi sur l'accès à l'inf mation Act / Document

North West Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865

e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 09, 2018

Client Job or PO#: NEED

Project number: 34699

Apr,
vacuuming
and wiping
down surfaces
in cabinet and
consoles in
wheelhouse down surfaces in cabinet and Comment consoles in wheelhouse vacuuming and wiping Apr, Density Concen. v/vv LOQ (fib/mm2) (fib/mL) v ٧ ≷ ≷ > <0.01 <0.01 0.084 <0.01 <0.01 0.00 16.56 1.27 2.55 2.55 Volume (L) 152.4 0 76.2 2456.26 18 용 100 100 50 Fields Fibres 13.0 0.0 2.0 1.0 2.0 Time (Mins) 191 8 8 0 0 00:00 16:10 00:00 12:28 Time O# 14:21 13:51 15:10 00:00 00:00 Time On 09:17 Avg. Flow Rate (lpm) 12,86 2.54 2.54 0 0 Type* Analyst 뚪 뚔 쫎 ਲ 2 8 | Feb-04-2018 | Feb-05-2018 | (OCC) Occupational | OCC ႘ ၓ Ą (AC1 PCM) Laundry Room on Upper Deck Feb-04-2018 | Feb-05-2018 | (OCC) Occupational (QC) Field Blank Feb-04-2018 Feb-05-2018 (QC) Field Blank Area Feb-05-2018 Feb-06-2018 Date Analysed Feb-04-2018 Feb-06-2018 Date Collected 34699-2a 34699-1a 34699-3a 34699-4a 34699-5a Sample No

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



1/3

LAB# 202314

000651

									g g	<u>ō</u>				#	
Comment									/ PAPR / Wiping and Yacuuming Surfaces	/ PAPR / Wiping and Vacuuming Surfaces				Filter Blow Out, No Result Possible	
007	٧		٧	٧	v	٧	>	>	v	٧			>		
00 n/n	}		>	*	>	>	^	>	>	>			}		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.035	0.024	<0.01	<0.01	<0.01	N/A	<0.01
Density (fib/mm2)	1.27	3.18	9.55	5.10	23.57	18.47	22.93	23.57	7.01	9.55	00'0	00.0	1.27	N/A	00'0
Volume (L)	2456.26	0	2441.4	2441.4	2167.2	2167.2	2167.2	2167.2	78	156	0	0	2252,28	N/A	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.0	2.5	7.5	4.0	18.5	14.5	18.0	18.5	5.5	7.5	0.0	0.0	1.0	0.0	0.0
Time (Mins)	191	0	195	195	180	180	180	180	30	09	0	0	137	N/A	0
Time Off	12:28	00:00	13:10	13:10	13:10	13:10	13:10	13:10	11:10	11:40	00:00	00:00	16:10	N/A	00:00
Time On	09:17	00:00	55:60	55:60	10:10	10:10	10:10	10:10	10:40	10:40	00:00	00:00	13:53	13:57	00:00
Avg. Flow Rate (Ipm)	12.86	0	12.52	12.52	12.04	12,04	12.04	12.04	2.6	2.6	0	0	16.44	16.43	0
Analyst	OC	ar	ar	ar	QC	Qſ	Ωſ	ar	Οί	ОС	Ωſ	유	88	Ж	%
Type*	AC	οc	AC	AC	AC	AC	ΨC	AC	220	220	ည	႘ၟ	AC	AC	ည
Area	(AC2 PCM) Laundry Room on Upper Deck	(QC) Field Blank 1	(AC5 PCM) Wheelhouse C	(AC6 PCM) Wheelhouse C	(ACS PCM) MCR Stores	(AC6 PCM) MCR Stores			(OCC) Void Space of Bartlett	(OCC) Void Space of Bartlett	(QC PCM) MCR	(QC) FB OCC	(AC1) Voidspace Below Wheelhouse	(AC2) Voidspace Below Wheelhouse	(QC) Field Blank
Date Analysed	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018
Date Collected	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-07-2018	Feb-07-2018	Feb-07-2018	Feb-07-2018	Feb-07-2018	34699-24a Feb-07-2018	Feb-07-2018	Feb-07-2018	Feb-08-2018	Feb-08-2018	34699-30a Feb-08-2018
Sample No	34699-6a	34699-9a	34699-11a	34699-12a	34699-19a	34699-20a	34699-21a	34699-22a	34699-23a	34699-24a	34699-26a	34699-27a	34699-28a	34699-29a	34699-30a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



AIHA PROFICIENCY ANALYTICAL TESTING PROSRAMS

LAB# 202314

2/3

٧	≩	<0.01 VV	1.27	100 2413.32	100	1.0	182	16:59	13:57	13.26	X	AC	AC3) Voidspace Selow Wheelhouse	Feb-08-2018	34699-31a Feb-08-2018 Feb-08-2018	9-31a
								·	Š							
ő	3				* 5	* 3		ĚŠ	Ěő	\$ }	Ž	1			\$ 5 6 5 6 5	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker) AMB - ambient; sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per mi.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

AIMA PROFICIENCY ANALYTICAL TESTING PROGRAMS

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

LAB# 202314

000653

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Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699 Date: February 9, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

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Notice of Project

NOP Confirmation number:

E768383

Owner information

Account #:

Name:

Victoria Coast Guard Base

Country:

Canada

Address:

25 Huron Street

City:

Victoria

Province:

British Columbia

Postal code:

Address:

Name:

Country:

City:

Province:

British Columbia

Prime contractor or employer information

Canada

Postal code:

Account #:

Person in charge of project

Name:

Job title:

Operations Manager

Fmail:

info@haz-mat.ca

(250) 891-8611 Ext:

Person completing this form

Name:

Email:

info@haz-mat.ca

Phone number:

(250) 891-8611 Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents:

Yes

Delivery method:

Phone number:

E-Mail

Sent date:

2018/02/01

NOP Confirmation number:

E768383

Asbestos, Lead or Other Similar Exposure Work Activity

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #:

968887

Canadian HAZ-MAT

Environmental Ltd

Country:

Canada

Address:

1111 Tulip Ave

City:

Victoria

Province:

British Columbia

Postal code:

V8Z 7Z2

Hours of work

Hours of work from:

08:00

Consulting firms

Name(s):

Northwest Environmental

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

Planned activity for a building or structure that contains asbestos materials or where asbestoscontaining material has been processed, manufactured or stored

Demolition:

Repair:

Yes

2/1/2018

WorkSafeBC Online - Notice of Project

Hours of work to: 16:00

Number of workers per shift

Total:

3

Renovation or alteration: Encapsulation:

Activity type involving asbestos-containing material

Removal: Yes

Enclosure:

Encapsulation: Y

Yes

Asbestos Work Activity Level

Risk level is:

Moderate

Lead project information (required only when completing a lead project)

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number:

E768383

Project site locations

Site Location Start date Project city Duration Unit Project site location

2018/02/04

Victoria

Days Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email:

prevnop@WorkSafeBC.com

(if your attachments are over 10 MB, send multiple emails or email us for further

instructions)

Fax:

604.276.3247

Mailing address:

WorkSafeBC, Prevention Division

PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone:

604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email:

prevnop@WorkSafeBC.com

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de la Loi sur l'accès à l'information 201-415 Gorge Road E Victoria, B.C. V8T 2W1



Tel: 250-384-9695 Fax: 250-384-9865 E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard

25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Machinery Control Room (MCR) Stores and MCR Console. 25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 7, 2018	•
Address of the abatement	CCGS Bartlett – MCR Console and MCR Stores	·
project	25 Huron Street, Victoria BC	
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd	
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"	

Contractor Scope of Work

MCR Console:

Remove asbestos-containing dust from all accessible surfaces within the console. Cut asbestos-containing cables at the opening of the conduit from the engines and seal the openings. Bag and remove the cables as asbestos waste. Clean the exterior of the console casing. Moderate risk clean-up of dusty surfaces.

NOTE 1: the intent of this work was not to remove all observable dust, but to remove all accessible, loosely adhered gross contamination from within the consoles and to clean all surfaces in the MCR in order to reduce the amount of loose material that may be rendered airborne during normal vessel operations. Abatement workers were required to gently vacuum cables and electrical components within the consoles; they were not permitted to handle cables beyond this to remove concealed dust.

NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.

MCR Store:

Remove asbestos-containing rope gasket/packing from the storage room. Clean all surfaces on the shelving unit following moderate risk procedures.



NWest Project Number: 34699 Date: February 8, 2018

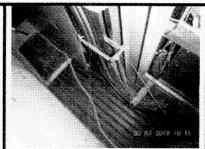
Photo Plate



MCR: Accessible surfaces in console cleaned.



MCR: Example of conduit opening.
Asbestos-containing cables
removed and the conduit opening
sealed.



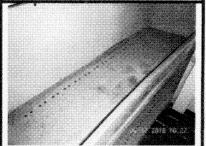
MCR: Deck and first foot of cables behind the console were cleaned.



MCR: Accessible surfaces in backside of console cleaned.



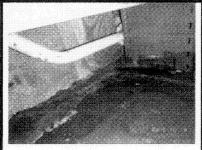
MCR: Air clearance samples.



MCR Stores: Asbestos-containing materials removed and shelving cleaned.



MCR Stores: Boxes and other materials to remain were vacuumed.



MCR Stores: Deck beneath shelving cleaned.



MCR Stores: Air clearance samples.

Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Technologist



Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699 Date: February 8, 2018

Bulk sample of stored gaskets identified asbestos-containing rope gasket/packing materials. The asbestos-containing gaskets have been exposed in the MCR Stores for an unknown length of time. This warranted efforts to remove all dust and debris from MCR Stores and MCR Console area.

NWest conducted a final clearance inspection and Final Visual Inspection. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities which have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.

Name and signature of the consultant who collected the air clearance samples			
		Technologist	
Reviewed by			
		Senior Project Manage	r
	Qualifi	ed Person as per OHS	Reg 6.1



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Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX A - Field Reports

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ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

	Iorth West nvironmental Grou	p Ltd.	FINAL VI	SU/	ABATEMENT AL INSPECTION THE INDUSTRIA	N CH	ECK	LIST
Date: 🎉	7,018	Time:	/////	Co	ntractor:			Inspector: KO.
	HC CC4				esent at Inspection			v
Project:	Berlott + cir pu			Sul	bmitted to:			
Location:	1) plat (2) Nek			Ins	pection Report N	o.: //		
Number of I	nspection (prior	to passing	ı): 🔲 1	□ 2	□3 □4	□5		
Control	Sperie o	4 S/A	ra :- ansiteo		Verified to be Complete by Contractor	Chec Build		y Representative of wner
					(Initial of Sup't)	Yes (Y)	No (N)	Action Taken
General					<u> </u>			
is all equ	Is all equipment removed from area?					7		
ls all asb	estos within scc	pe remov	ed?			1		
All ACM	Waste removed	I from area	1?	***************************************				
ls area re barriers?	ady for barriers	to be rem	oved to critic	cal				no barriers.
	ut, decon, and end waste?	equipment	room free of					NO de CON.
Is area n	eady for encaps	ulation?						
Do Nega tests?	tive Air Machine	es have su	ifficient DOP					
Enclosure								NA
Negative in.w.g.	pressure (whe	re applicat	ole) at min(0.03				- CDAJA- 55
All enclo	sures intact and	properly:	sealed			<u> </u>		المحاصل المحاصل
Space v	acuumed with c	enified HE	PA vacuum	only				VIS10147
Poly wip	Poly wiped clean (free from removable residue)						MA	put out dill's
Negative down	air machine (w	there appli	cable) wiped				M	f.
Discharg	e hoses clean a	and free of	perforations			ļ		Variation of the
All waste	removed from	space			<u> </u>		ļ	Carthan
bagged	ng tools and eq							for inspection
Dust and D	ebris: Vertical	and horiz	ontal surfac	:e s				
Window	sills and tracks							



Walls and doors

Page 1 of 3

Form: IC1.V0.A-12/10/16

ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

Sant	amha	er 2016
vous	GHUZ	N ZUIU

Tops of baseboards		771	
Tops of doors, hinges and frames			
Door frames pockets			
Wall mounted fixtures	1/2		
Floors including all corners and spaces behind doors			

No information has been removed or severed from this page



Page 2 of 3

Form: IC1.V0.A-12/10/16

ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

OBSERVATIONS	RECOMMENDATIONS/ INSTRUCTIONS	DATE RECTIFIED/ INSPECTOR'S INITIALS		
1. Location: Mex Control Pane	L- Bartist			
a. Space is clear partly has been thoroughly	· free of dust - debris.	Ko.		
		o a suite de marie de la constante de la const		
2. Location: Meh Stone Poor	m "Barthall			
Shelf item har lesen remon	*			
76.				
3. Location: Enger- Poor	Chalas - Marthal			
a. Cable ends have been equelal + taped.		4		
free of dust + debris.				
4. Location:				
a .				
b.				



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Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX B - Analytical Results

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North West Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 08, 2018

Client Job or PO#: NEED

Project number: 34699

Comment	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse			
ბ 07	٧	v			٧
^/vv	>	3			≥
Concen. (fib/mL)	0.084	<0.01	<0.01	<0.01	<0.01
Density Concen, v/vv LOQ (flb/mm2) (flb/mL)	16.56	1.27	0.00	2,55	2.55
Volume (L)	76.2	152.4	0	0	2456.26
# Fields	100	100	100	100	100
# Flbres	13.0	1.0	0.0	2.0	2.0
Time (Mins)	30	09	0	0	191
Time Off	14:21	16:10	00:00	00:00	12:28
Time On	13:51	15:10	00:00	00:00	09:17
Avg. Flow Rate (lpm)	2.54	2.54	0	0	12.86
Type* Analyst	BR	æ	BR	BR	Ą
Type*	2200))	ည	ებ	AC
Area	34699-1a Feb-04-2018 Feb-05-2018 (OCC) Occupational	Feb-05-2018 (OCC) Occupational	Feb-05-2018 (QC) Field Blank	Feb-04-2018 Feb-05-2018 (QC) Field Blank	Feb-06-2018 Feb-06-2018 Room on Upper Deck
Date Analysed	Feb-05-2018	Feb-05-2018	Feb-05-2018	Feb-05-2018	Feb-06-2018
Date Collected	Feb-04-2018	34699-2a Feb-04-2018	Feb-04-2018	Feb-04-2018	Feb-06-2018
Sample No	34699-1a	34699-2a	34699-3a	34699-4a	34699-5a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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			—									
Comment									/ PAPR / Wiping and Vacuuming Surfaces	/ PAPR / Wiping and Vacuuming Surfaces		
00	٧		٧	v	٧	٧	v	٧	٧	٧		
^/^	}		>	\$	>	>	>	٧	^	>		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.035	0.047	<0.01	<0.01
Density (fib/mm2)	1.27	3,18	9.55	5.10	23.57	18.47	22.93	23.57	7.01	9.55	00.0	0.00
Volume (L)	2456.26	0	2441.4	2441.4	2167.2	2167.2	2167.2	2167.2	78	78	0	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.0	2.5	7.5	4.0	18.5	14.5	18.0	18.5	5.5	7.5	0.0	0.0
Time (Mins)	191	0	195	195	180	180	180	180	30	30	0	0
Time Off	12:28	00:00	13:10	13:10	13:10	13:10	13:10	13:10	11:10	11:10	00:00	00:00
Time On	09:17	00:00	09:55	09:55	10:10	10:10	10:10	10:10	10:40	10:40	00:00	00:00
Avg. Flow Rate (Ipm)	12.86	0	12.52	12.52	12.04	12.04	12.04	12.04	2,6	2.6	0	0
Type* Analyst	JD	JD	Дſ	JD	Дſ	ος	ЭС	JD	£ C	OT	Ωſ	ar
Type*	AC	S,	AC	AC	AC	AC	AC	AC	220	220	ος	ည
Area	(AC2 PCM) Laundry Room on Upper Deck	Feb-06-2018 Feb-06-2018 (QC) Field Blank 1	(AC5 PCM) Wheelhouse C	(AC6 PCM) Wheelhouse C	(ACS PCM) MCR Stores	(AC6 PCM) MCR Stores	(AC7 PCM) MCR Panel Control	Feb-08-2018 (AC8 PCM) MCR Control Panel	Feb-08-2018 (OCC) Void Space of Bartlett	Feb-08-2018 (OCC) Void Space of Bartlett	Feb-08-2018 (QC PCM) MCR	(QC) FB OCC
Date Analysed	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018		Feb-08-2018			Feb-08-2018 (QC) FB OCC
Date Collected	Feb-06-2018 Feb-06-2018	Feb-06-2018	34699-11a Feb-06-2018 Feb-06-2018	Feb-06-2018	34699-19a Feb-07-2018	34699-20a Feb-07-2018 Feb-08-2018	34699-21a Feb-07-2018 Feb-08-2018	Feb-07-2018	34699-23a Feb-07-2018	34699-24a Feb-07-2018	34699-26a Feb-07-2018	34699-27a Feb-07-2018
Sample No	34699-6a	34699-9a	34699-11a	34699-12a	34699-19a	34699-20a	34699-21a	34699-22a	34699-23a	34699-24a	34699-26a	34699-27a

PAT PROGRAMS
ANA PROFICENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker) AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

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Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX C – Notice of Project for Asbestos (NOPA)

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Notice of Project

NOP Confirmation number:

E768383

Owner information

Account #:

Name:

Victoria Coast Guard Base

Country:

Canada

Address:

25 Huron Street

City:

Victoria

Province:

British Columbia

Postal code:

ia City:

Province:

Account #:

Name:

Country:

Address:

.....

Person in charge of project

Name:

Job title:

Operations Manager

Email:

info@haz-mat.ca

Phone number:

(250) 891-8611 Ext:

Postal code:

Person completing this form

Prime contractor or employer information

Canada

Name:

Email:

info@haz-mat.ca

British Columbia

Phone number:

(250) 891-8611 Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

NOP Confirmation number:

F768383

Asbestos, Lead or Other Similar Exposure Work Activity

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #:

968887

Name:

Canadian HAZ-MAT

Environmental Ltd

Country:

Canada

Address:

1111 Tulip Ave

City:

Victoria

Province:

riovince.

British Columbia

Postal code:

V8Z 7Z2

Hours of work

Hours of work

from:

08:00

Consulting firms

Name(s):

Northwest Environmental

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

Planned activity for a building or structure that contains asbestos materials or where asbestos-containing material has been processed, manufactured or stored

Demolition:

Repair:

Yes

2/1/2018

WorkSafeBC Online - Notice of Project

16:00 Hours of work to:

Number of workers per shift

Total: 3 Renovation or alteration: Encapsulation:

Activity type involving asbestos-containing material

Enclosure:

Encapsulation:

Yes

Asbestos Work Activity Level Moderate

Risk level is:

Lead project information (required only when completing a lead project)

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number:

E768383

Project site locations

Site Location Start date Project city

Duration

Unit Project site location

1

2018/02/04

Victoria

Victoria Coast Guard Base 25 Huron Street Days

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email:

prevnop@WorkSafeBC.com

(if your attachments are over 10 MB, send multiple emails or email us for further

instructions)

Fax:

604.276.3247

Mailing address:

WorkSafeBC, Prevention Division

PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone:

604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email:

prevnop@WorkSafeBC.com

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer
Sent: February-22-18 6:42 PM

To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC,

Bartlett Chief Officer

Subject: IIR - Asbestos Dust Sampling

Attachments: Wheelhouse Console Dust Sampling.pdf; 34699 ASB ACD1 V1.0 - CCGS Bartlett -

Laundry Room.pdf; 34699 ASB ACD2 V1.0 - CCGS Bartlett - Wheelhouse and Consoles.pdf; 34699 ASB ACD3 V1.0 - CCGS Bartlett - MCR Stores and MCR Console.pdf; 34699 ASB ACD4 V1.0 - CCGS Bartlett - Void Space Under Wheelhouse.pdf; 34699 RA1 V1.0 - CCGS Bartlett Dust Abatement.pdf

FYI,

Please see attached IIR regarding asbestos dust found in Bridge console; (and numerous other asbestos abatement & test reports from last patrol cycle)

Highlights:

- Dust from Bridge Fire Panel console tested positive for ACM (Asbestos Containing Material). "High Contamination".
- Laundry Room Dust (behind washing machines) also tested positive for ACM following hull bulkhead panel seam splitting & hull contact with dock. "Moderate" Range.
- Wiring from Bridge console (70% Chrysotile) & MCR console tested positive for ACM, (30% Chrysotile but non-friable).
- 30% Chrysotile also tested positive in a sample of pump/valve packing from our MCR Stores.
- Air Testing results → mostly below level of detection (0.01f/ml fibre per ml air). Results received and some samples were above the limit of detection <u>but below the limit of quantitation (LOQ)</u>. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are <u>below WorkSafeBC exposure limits".</u>
 - February 9, 2018 NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE: "We met the minimum volume and all samples were less than 0.01 fibres per mL, (Limits of Detection" / LOD), under WorkSafeBC limits.".
- Dust sample results received: HVAC return and <u>3 of 4 samples from ER returned low or none detected</u>. MCR console sample returned "moderate", this was directly below the ACM wire removals.
- Feb.9.2018 NWE (NorthWest Environmental) recommendations: We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.
- "A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire
 insulation on the bridge. Restricting access and sampling the dust was the course of action upon receiving the
 wire insulation results. Void space, MCR console, MCR Stb'd Stores and Laundry Room access was restricted
 upon receiving the results on asbestos-containing materials found."

• Section J. Corrective Measures:

Future Asbestos Management Surveys to include on-board air sampling and dust wipe samples.

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As per NWE recommendation future work inside Wheelhouse and MCR consoles and Wheelhouse Void to be considered asbestos work due difficultly of removing all the dust for the wiring, terminal strips, circuit boards/components, cloth wrap on wiring and bronze braid on the electrical cables.

Work outside of normally accessed spaces/equipment may encounter the possibility of asbestos debris and be considered in the risk assessment prior to starting work.

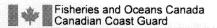
Vessel Specific Asbestos Management plan and labels updated to cover findings during the investigation. Upon return to Victoria additional dust sampling to be conducted in the ER/AMS as per NWE recommendations. Training arranged for 5 crew members for Asbestos Awareness and Abatement on February 22/23.

- NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stb'd Stores.
- Attached reports of ACM dust cleanup from Bridge, Laundry Room, MCR Console, and Bridge Void Space may be of interest.

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

<u>BartlettCE@bar.ccgs-ngcc.gc.ca</u> <u>BartlettChief@gmail.com</u> for files above 5 MB



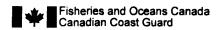
INCIDENT INVESTIGATION REPORT (IIR) 9.B.1 NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence. A. Type of Incident (Required) (Choose only one) Disabling Injury (visit to medical professional, time lost) Loss of Consciousness due to electric shock or toxic atmosphere ☐ First Aid Near Miss Minor Injury (visit to medical professional, no time lost) Pollution Activation of an Emergency Procedure Property Damage Fire or Explosion (Shore only) □ Unsatisfactory Condition Other (specify) B. General Information (Required) Employer's (Department) Name Site/Vessel Name (and official number) Canadian Coast Guard **CCGS Bartlett** Date of Report (YYYY-MM-DD) 2018-02-12 Mailing Address 25 Huron Street, Victoria BC V8V 4V9 Name of Responsible Supervisor Captain Mike McCullagh Supervisor's Telephone # 250.213.3685 Organization (Select One) National HQ Coast Guard College Region (if selected, choose Directorate and Program/Branch below) Regional Directorate (Select One) ☐ AC's Office 区 Fleet ☐ IBMS □ ITS Incident Management ☐ Navigational Programs Program/Branch (Select One) AtoN MarSup Refit and Maintenance ☐ ROC Canso ☐ MCI □ CGSS ☐ MCTS ☐ SAR □ E&I **П**МЕ ☐ Science FFM (C&P) **⊠** MNS □ ER ☐ MSET ☐ Other Ice Ops Business □ILS C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed. Surname Given Name Initial(s) Age Gender Job Title Years of experience in current Female Male position **Employment Status** Indeterminate Term Casual/Relief Program Client Student Contractor

Other (Specify)

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-	Fisheries	and	Oceans	Canada
Ŧ	Fisheries Canadian	Coa	ast Guard	t

D. Incident Information (Required)									
Did this involve a motor vehicle* accident? Yes \(\subseteq \ No \times \subseteq \text{completed.} \)									
Did this involve Helicopter Operations? Yes 🗌 No 🔀 Did this incident involve Small Craft Operations? Yes 🗌 No 🔀									
Location of Inciden	it (include geographical	name of body of wa	iter, waterway, harbo	our, <mark>latitude</mark> , longitude if a	pplicable)				
Juan de Fuca Stra	it - WCVI Transiting No	rth							
Date of Incident (YY	Date of Incident (YYYY-MM-DD) 2018-01-31 Time of Incident (Local) 15:39								
Body part injured (if applicable)									
☐ Abdomen	☐ Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin				
☐ Arm	☐ Body System / Int	ternal 🔲 Foot	☐ Head	☐ Leg	☐ Shoulder				
☐ Auditory	☐ Chest	☐ Hand	☐ Hip	☐ Multiple injuries	Unknown				
Nature of injury (if k	nown)								
☐ Burns			☐ Multiple Injurie	es					
☐ Fractures			☐ Traumatic join	t/ligament and muscle/ter	ndon injury				
☐ Injury to Nerves	and Spinal Cord		☐ Wounds, Lace	erations and Amputations					
☐ Intracranial Injur	у		Unknown						
E. Investigation In	formation (Required)			,					
Type of Event									
Caught in or bet	ween	Exposure to a tr	raumatic event	Slips, trips and fa	lls				
Contact with har	rmful substance	☐ Mechanical/Equ	ipment Failure	Struck by or again	nst				
Exposure to Ele	ctricity	Mechanism of h	arm unknown	Vehicle incident					
Exposure to Fire	•	Overexertion		Other (specify)					
Exposure to hea	at/cold	☐ Repetitive Motion	on						
Exposure to nois	se			Unknown dust identified as containing Asbestos					
			I sheets, chart(let)s,	diagrams, location of any	failed or damaged				
	e investigation or photo								
January 31, 2018 - 1539 Results received from dust samples taken during Wheelhouse Console ACM Wiring Insulation IIR. Test results from the consoles fell in the high range compared with expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (iATL). In consultation with the RD Fleet, the vessel turned around and returned to Victoria and was secured @ 2350. Additionally results from dust samples taken in the Laundry Room after the cracked ACM bulkhead IIR clean-up fell in the moderate range compared with "experience standards".									
February 1, 2018 - 0800 Northwest Environmental Group Limited (NWE) and Canadian HAZ-MAT were contacted to attend the vessel to develop a sampling/testing and remediation plan. NWE provided third party oversight of the remediation work and performed the visual and air clearance inspection and documentation. Bulk samples taken from wiring in MCR console due to similar morphology wiring which tested positive in the Wheelhouse. Sample results returned positive for 30% Chrysotile asbestos. Roll of packing in MCR STBD stores tested positive for 30% Chrysotile asbestos.									
February 2, 2018 - 1000 NWE on-board to implement Background Asbestos Testing. Background testing was conducted to look for evidence of the spread of asbestos contamination. The test consists of surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether the fibres have been rendered airborne. 1630 the first set of results for the low volume air sampling were received and verbally conveyed by NWE, the results were below the level of detection 0.01f/ml. 1900 sample results conveyed by NWE from the longer running high volume pumps were also below the level of detection 0.01f/ml. NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stbd Stores.									



February 3, 2018 - NWE returned to perform long duration (10 hours) sampling in the same locations. The sample volume must be greater than 1425 liters to qualify the results to a prove the air meets the Air Clearance/Permissible Exposure Limit for continuous occupation of 0.01f/ml. Results received and some samples were above the limit of detection but below the limit of quantitation. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorksafeBC exposure limits"

Dust samples to couriered by NWE to iATL February 5, 2018 with quick turn around time of samples of 6 hours ordered. Hold up clearing customs at the border required re-sampling on Feb 8, 2018.

February 4, 2018 - Canadian Haz-mat began work cleaning Wheelhouse consoles with oversight provided by NWE.

February 5, 2018 - Canadian Haz-mat finished work in the Wheelhouse and started and finished work in the Laundry Room. Both spaces passed visual inspection by NWE.

February 6, 2018 - Canadian Haz-mat on-board removing thermocouple extension wire from ER and MCR console. MCR console cleaning started and completed. All unidentifiable packing disposed of through Canadian Hazmat. Stbd MCR cleaning started and completed. NWE air clearance samples from Wheelhouse and Laundry Room passed.

February 7, 2018 - Canadian Haz-mat on-board setup and performing cleaning in Bridge Void Space. Stbd MCR, ER, and MCR passed visuals inspection by NWE. NWE air clearance sampling from MCR and Stbd MCR taken and passed.

February 8, 2018 - Canadian Haz-mat onboard completed cleaning in Bridge Void Space. Space passed visual inspection by NWE. NWE air clearance sample from Bridge Void Space passed. Dust wipe samples retook in ER, MCR, and HVAC as the initial samples were still held up at customs.

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE:"We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits."

Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals. The area was wet wiped after the sample taken. MCR passed air and visual clearance by NWE. As per NWE recommendation, console top was HEPA vacuumed. One sample taken from ER in an inaccessible place returned "elevated". Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: "Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer." Follow up sampling to be conducted upon return to Victoria. Defect entered.

Reports attached:

- -iATL dust wipe samples results
- -NWE air sample test results alongside
- -NWE Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments
- -NWE Asbestos Air and Visual Clearance Documents for effected spaces

-NWE Asbestos Air and visual Clearance Documents for effected spaces -NWE air sample test results while underway at sea conditions		
Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?	⊠Yes	□No
Specify		
A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulation of Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. Voconsole, MCR Stbd Stores and Laundry Room access was restricted upon receiving the results on asbestos-conmaterials found.	id space,	
Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?	□Yes	⊠No



Canadian Coast Guard	
Specify	
F. Immediate/Direct Causes (Required) (Check all	that apply)
Substandard Actions	Substandard Conditions
Bypassin g safety devices	☐Congested or restricted area
Failure to check or monitor	☐Defective tools, equipment or materials
Failure to communicate/coordinate	☐ Excessive noise
☐Failure to follow procedure/policy	☐Heat/cold exposure
⊠Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE
Failure to react/correct	☐Inadequate communication
Failure to service equipment properly	☐Inadequate guards or barriers
☐Failure to use PPE	☐Inadequate information/data
Failure to warn or secure	☐Inadequate instruction/procedure
]Horseplay	☐Inadequate preparation/planning
☐Improper lifting	☐Inadequate support/assistance
Improper loading, placing, mixing	☐Inadequate ventilation
☐Improper position/posture for task	☐Inadequate warning system
Operating at improper speed	Lack of tools, equipment or materials
Using defective equipment	Poor housekeeping
Using equipment improperly	⊠Presence of harmful materials
Other action (Specify)	☐Radiation exposure
	□ Uneven ground/terrain
	Weather or environmental conditions
	☐Other condition (Specify)
mmediate/Direct Causes (Required)	
Of the above checked immediate/direct causes provi	de details as to which one was the leading cause of the incident.
	Additional wires of the same morphology as the ACM wires on the bridg e of the dust is from pulling asbestos containing cabling throughout the

Fisheries and Oceans Canada

-	Fisheries Canadian	and	Oc	eans	Canada
Ŧ	Canadian	Coa	ist (Guard	1

G. Basic/Root Causes (Required) (Check all that apply)						
Personal Factors			Job Factors	·		
☐Emotional stress		Abuse or misuse of equipment				
Fatigue			│ Inadequate engineering o	_		
Lack of knowledge and/or skill						
Physical stress or capability			Inadequate personnel to	•		
Rushing or inattention			Inadequate tools/equipme			
Other (Specify)			Inadequate training and/o		tion	
			Inadequate work standard	•		
			Lack of enforcement of p		•	
			☐Standards/procedures no ☐Wear and tear	it developed		
			Other (Specify)			
Basic/Root Causes (Required)						
Of the above checked Basic/Root cause incomplete identification and abatement the wiring in these consoles.	s provide details of asbestos on-	as to w board. I	hich one was the leading cau Depth and scope of previous	use of the ind Asbestos Si	cident. urveys did not identify	
H. Witnesses (As Required) (NOTE: Witnesses)	tness statements r	nay be re	equired depending on the severit	ty of the incide	ent – Attach all additional	
Name of Witness # 1	Telephone #		Name of Witness # 3		Telephone #	
Matthew Jackson CE	250-882-1273		Steve Buss SE		250-213-3685	
Name of Witness # 2	Telephone #		Name of Witness # 4		Telephone #	
Mike McCullagh CO	250-882-3864					
I. Property / Equipment Damage (As F	lequired)					
Nature and extent of property damage					Estimated Cost (\$)	
J. Corrective & Preventative Measures recurrence)	s (Required) (De	escribe (corrective measures taken an	nd/or recomr	nended to prevent	
Future Asbestos Management Surveys to include on-board air sampling and dust wipe samples. As per NWE recommendation future work inside Wheelhouse and MCR consoles and Wheelhouse Void to be considered asbestos work due difficultly of removing all the dust for the wiring, terminal strips, circuit boards/components, cloth wrap on wiring and bronze braid on the electrical cables. Work outside of normally accessed spaces/equipment may encounter the possibility of asbestos debris and be considered in the risk assessment prior to starting work. Vessel Specific Asbestos Management plan and labels updated to cover findings during the investigation. Upon return to Victoria additional dust sampling to be conducted in the ER/AMS as per NWE recommendations. Training arranged for 5 crew members for Asbestos Awareness and Abatement on February 22/23. Corrective action responsibility assigned to Date to be completed (YYYY-MM-DD) Follow-up Date (YYYY-MM-DD)						
Corrective action responsibility assigned	ו וט	Date to	be completed (YYYY-MM-DD)	Follow-up	Jaic (TTTT-MM-DD)	
Chief Engineer/Marine Engineering		11		11		

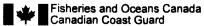
- * -	Fisheries	and	Oceans	Canada
Ŧ	Fisheries Canadian	Coa	ast Guard	d

K. Investigation Completed	By (Required)						
Name of person investigating	Te	elephone #	Signature				
Matthew Jackson	25	50-882-1273	Matt Jackson	Digitally signed by Matt Jackson DN cn=Matt Jackson, o=Coast Guard, ou= email=BartlettCE@cogs-ngoc.gc.ca, cnCA Date 2018.02.13 08 37 47 -08/00*	Coest Guard,		
Title Chief Engineer		Date (YYY)	/-MM-DD) 13	3/2/2017			
Email address BartlettCE@	ccgs-ngcc.gc.ca						
Investigators comments							
Depending on the anticipated developed. Future Asbestos Managemer Bulk sampling frequency and At sea air sampling plan was to operational status.	nt Surveys to include regulations to the scope to be increased to the scope to be increased to the scope to t	ar air and dust sampl further identify/clear a	ing. areas on-board of ACM.	·			
L. Workplace OHS Committee		<u>-</u>	• • • •				
Workplace OHS Committee Member / Health and Safety Representative Information							
Name		elephone #	Signature	Clostally signed by Steve Buss			
Steve Buss	25	0-213-3685	Steve Buss	Digitally signed by Steve Buss. DN: cr=Steve Buss, o=Canadian Coast Gue email+BartledSE@copongoc.pc.cs. c=CA Date: 2018.02.13.08.45.05-08700*	ard, ou=OFO.		
Title	En	nail address	Date (YYYY-M	M-DD)			
Senior Engineer	Ba	rtlettSE@ccgs-ngcc.	2018-02-13				
Workplace OHS Committee N	Member/Health and Safety	Representative com	ments	1			
Investigation performed to co developed for future testing to the developed for future testing testing to the developed for future testing tes	o ensure the health and sa	fety of all crew memb					
-	<u> </u>	T	Cinneture				
Name of Commanding Office Michael McCullagh	r / responsible Manager	Telephone # 250-882-3864	Signature Michael McCull	Dystally signed by Michael McCallagh DN orn-Michael McCallagh, in-Canadian Coast Guard Fleet, our-COSS Barriet, email-BarrietCogles organ-ripoc.pc.ca, or/CA Date: 27th 02.11 on 15.51-06/07			
			INTERIOR INTERIOR	1_			
Title		Email address		Date (YYYY-MI	VI-DD)		
Commanding Officer		BartlettCO@ccgs-n		2018-02-13			
Has the relevant task(s) on the S				<u> </u>	es No		
Additional comments to include Concur with corrective and proceed containing work spaces.					ACM		

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and





the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the <u>Privacy Act</u> and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: <u>DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca</u>.





201-415 Gorge Road E Victoria, B.C. V8T 2W1

Tel: 250-384-9695 Fax: 250-384-9865 E-mail: Northwest@nwest.bc.ca

February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard

25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Laundry Room 25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 5, 2018	
Address of the abatement	CCGS Bartlett – Laundry Room	
project	25 Huron Street, Victoria BC	
Name of the abatement	Canadian Haz-Mat Environmental Ltd	
contractor		
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"	

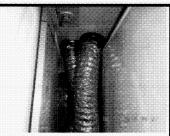
Contractor Scope of Work:

Remove asbestos-containing dust from all surfaces behind the washing machines and dryers. Clean all exposed surfaces in the laundry room. Moderate risk clean up of less than 5 square meters of dusty surfaces.

Photo Plate



Photo of entrance into the Landry Room. Popup enclosure was used to create a larger work space.



Example of dust cleaned from behind units.



Example of dust removed from the work area.

NWest Project Number: 34699 Date: February 8, 2018



Example of dust removed from the work area.



Example of Laundry Room exposed surface cleaned of dust.



Example of the deck beneath the units cleaned of dust.

Notice of Project — Asbestos	NOPA E768383				
Waste manifest documentation	BP16288-2				
Consultant that performed the final visual inspection	Technologist				

This space was originally cleaned following the discovery of a crack in the asbestos-containing bulkhead panel under the porthole. The abatement contractor cleaned all accessible surfaces, including inside cupboards following moderate risk procedures. Dust was observed behind the washers and driers, which are fastened into place, rendering this dust inaccessible. NWest conducted surface wipe sampling and found the dust to contain asbestos, warranting additional efforts to remove it.

NWest conducted a Final Visual Inspection and clearance air sampling. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities. These have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.

Laundry Room clearance samples: 34699-5 and 34699-6. Field blank: 34699-9.

Name and signature of the consultant who collected the	
air clearance samples	Technologist
Reviewed by	
	Senior Project Manager Qualified Person as per OHS Reg 6.1



Canadian Coast Guard CCGS Bartlett – Laundry Room NWest Project Number: 34699 Date: February 8, 2018

APPENDIX A - Field Reports



s.19(1)

North West Environmental Group Ltd.			ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST (FOR USE BY THE ENVIRONMENTAL CONSULTANT)						
Date: Feb	512	2018		Proje	-	699			
Time on/off site: 1.45pm NWest representative(s): 3 Sulmon Report number: 321699 Site address/location: 75 Huron St.									
Report number:	346	99	Site address/le	ocation:		thur GSS T	on St. Bartlett		
Weather:		Clear		Contracto Name:		sentative	Chadian How Mat		
Client and contact	name:	1		Number o workers o		ment	6		
~Volume of Contain	nment:	Small		Number of units in u		ve air	0		
Work Zone Location	n:	Laundry	Km						
RESULTS:		FAILED or PAS	SSED. See obs	ervations	and in	structions	below.		
Number of Inspection	on (prior	to passing):	11 🗖 2 🗆	3 4	<u></u> 5				
Checked by Repres	entative	of Building Owne	er						
General				Yes (Y)	No (N)		Observations		
All equipment re	emoved	from area							
All asbestos witi	nin scope	removed from th	ne substrate		V	- Keconcil	ed while onesite		
All ACM Waste r	emoved	from containmen	t						
Area is ready for	r barriers	to be removed]	tupan A	r Clearance		
Checked by Repres	entative	of Building Owne	r						
Enclosure				Yes (Y)	No (N)		Observations		
Decontaminatio	n chamb	ers free of dust, d	lebris and waste						
Area ready for e	ncapsula	ition				NA			
Negative Air Ma	Negative Air Machines have sufficient DOP tests					NA			
Negative pressu	re (wher	e applicable) at m	in0.03 in.w.g.			14/4			
All enclosures in	tact and	properly sealed							
Space vacuume	d with ce	rtified HEPA vacu	um only						
Poly wiped clear	n (free fr	om removable res	idue)						

NWEST FINAL VISUAL NSPECTION REPORT SITE ADDRESS/LOCATION:

PROJECT NUMBER: REPORT NUMBER:

En closure	Yes (Y)	No (N)	Obse	ervations	
Negative air machine (where applicable) wiped down		<u> </u>	N	Z	
Discharge hoses clean and free of perforations			N/	13	
All waste removed from space					
Remaining tools and equipment wiped down or bagged	√				
Window sills and tracks free from debris	V				
Walls and doors free from dust and debris					
Tops of baseboards free from dust and debris	1				
Tops of doors, hinges and frames free from dust and debris	/				
Door frame pockets free from dust and debris	1			. 1	
Wall/Ceiling mounted fixtures free from dust and debris		~	Keu	oncited	an-situ
Floors including scaffolding walk boards free from dust and debris		~	!	11	11
Instructions for Contractor:				Contro	ctor Representative Signature:
1 Clean corners behind pipe				:	
Re-wipe launday tray and	id -	tobe	7		
3.					
4.					

END OF DOCUMENT



Canadian Coast Guard CCGS Bartlett – Laundry Room NWest Project Number: 34699 Date: February 8, 2018

APPENDIX B - Analytical Results



de la Loi sur l'accès à l'info

> North West Environmental Group Ltd. 3N.NZ

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9655 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 06, 2018

Project number: 34699 Client Job or PO#: NEED

Comment	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelthouse	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse			
P00	<u>* 8 3 5 5 8 2 ×</u> ∨	<u>×83.58</u> ×			~
^ / ^	>	3		-	≥
Concen. (fib/mL)	0.084	<0.01	<0.01	<0.01	<0.01
Density Concen. v/vv LOQ (flb/mm2) (flb/mL)	16.56	1.27	00'0	2.55	2.55
Volume (L)	76.2	152,4	0	0	100 2456.26
# Fields	100	100	100	100	100
# Fibres	13.0	1.0	0.0	2.0	2.0
Time (Mins)	30	99	0	0	191
Time Off	14:21	16:10	00:00	00:00	12:28
Time On	13:51	15:10	00:00	00:00	09:17
Avg. Flow Rate (Ipm)	2.54	2.54	0	0	12.86
Type* Analyst	BR	#	BR	BR	OC
Туре*	ээо	330	QC	ЭÒ	AC
Area	34699-1a Feb-04-2018 Feb-05-2018 (OCC) Occupational OCC	34699-2a Feb-04-2018 Feb-05-2018 (OCC) Occupational OCC	34699-3a Feb-04-2018 Feb-05-2018 (QC) Field Blank	(QC) Field Blank	34699-5a Feb-06-2018 Feb-06-2018 Room on Upper Deck
Date Analysed	Feb-05-2018	Feb-05-2018	Feb-05-2018	Feb-04-2018 Feb-05-2018	Feb-06-2018
Date Collected	Feb-04-2018	Feb-04-2018	Feb-04-2018		Feb-06-2018
Sample No	34699-1a	34699-2a	34699-3a	34699-4a	34699-5a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



1/2

LAB# 202314

989000

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi

AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



AIHA PROFICIENCY ANALYTICAL YESTING PROGRAMS

LAB# 202314

2/2

Canadian Coast Guard CCGS Bartlett – Laundry Room NWest Project Number: 34699 Date: February 8, 2018

APPENDIX C - Notice of Project for Asbestos (NOPA)



Account #:

Name:

Country:

Address:

Province:

Postal code:

City:



WORKING TO MAKE A DIFFERENCE

Notice of Project

NOP Confirmation number:

Owner information

Account #:

Name:

Victoria Coast Guard Base

E768383

Country:

Canada

Address:

25 Huron Street

City:

Victoria

Province:

Postal code:

Person in charge of project

British Columbia

Name:

Job title:

Operations Manager

Email:

info@haz-mat.ca

Phone number:

(250) 891-8611 Ext:

Person completing this form

Prime contractor or employer information

Canada

Name:

Fmail:

info@haz-mat.ca

British Columbia

Phone number:

(250) 891-8611 Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

NOP Confirmation number:

E768383

Asbestos, Lead or Other Similar Exposure Work Activity

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #:

968887

Name:

Canadian HAZ-MAT

Environmental Ltd

Country:

Canada

Address:

1111 Tulip Ave

City:

Victoria

Province:

British Columbia

Postal code:

V8Z 7Z2

Hours of work

Hours of work

from:

08:00

Consulting firms

Name(s):

Northwest Environmental

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments:

Yes

Delivery method:

Sent date:

2018/02/01

E-Mail

Planned activity for a building or structure that contains asbestos materials or where asbestoscontaining material has been processed, manufactured or stored

Demolition:

Repair:

Yes

Hours of worl	k to: 16:00					
				Renovatio		
				alteration	-	
Number of v	workers per shi	ift		Encapsula	ation:	
Total:	3			****		
			<u> </u>	Activity t	type invo	olving asbestos-containing material
				Removal:		Yes
				Enclosure		
			:	Encapsula	ation:	Yes
				Asbestos	Work A	ctivity Level
				Risk level	is:	Moderate
Lead abateme		•		lead projec	ct)	
Lead abateme Significant dis Other similar ionizing radia Other significa	ent: sturbance of lead	I-containing mat activity with sign ational disease:	erials: ificant risk o			se from biological or chemical agent, or
Lead abateme Significant dis Other similar ionizing radia Other significa	ent: sturbance of lead exposure work a tion ant risk of occupant	I-containing mat activity with sign ational disease:	erials: ificant risk o			se from biological or chemical agent, or
Lead abateme Significant dis Other similar ionizing radia Other significa Other significa	ent: Eturbance of lead exposure work a tion ant risk of occupa ant risk of occupa on number:	l-containing mat activity with sign ational disease: ational disease e	erials: ificant risk o			se from biological or chemical agent, or
Lead abateme Significant dis Other similar ionizing radia Other significa	ent: Eturbance of lead exposure work a tion ant risk of occupa ant risk of occupa on number:	l-containing mat activity with sign ational disease: ational disease e	erials: ificant risk o	f occupation	nal diseas	se from biological or chemical agent, or

confirmation number E768383 and a brief project site description:

Email:

prevnop@WorkSafeBC.com

(if your attachments are over 10 MB, send multiple emails or email us for further

instructions)

Fax:

604.276.3247

Mailing address:

WorkSafeBC, Prevention Division

PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone:

604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email:

prevnop@WorkSafeBC.com

201-415 Gorge Road E Victoria, B.C. V8T 2W1

Tel: 250-384-9695 Fax: 250-384-9865 E-mail: Northwest@nwest.bc.ca



February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard

25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Wheelhouse and Consoles 25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 4-5 2018	
Address of the abatement	CCGS Bartlett – Wheelhouse and Consoles	
project	25 Huron Street, Victoria BC	
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd	
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"	

Contractor Scope of Work:

Remove asbestos-containing dust from all accessible surfaces within all consoles. Clean all exposed surfaces in the Wheelhouse. Moderate risk clean-up of dusty surfaces.

NOTE 1: the intent of this work was not to remove all observable dust, but to remove all accessible, loosely adhered gross contamination from within the consoles and to clean all surfaces in the Wheelhouse in order to reduce the amount of loose material that may be rendered airborne during normal vessel operations. Abatement workers were required to gently vacuum cables and electrical components within the consoles; they were not permitted to handle cables beyond this to remove concealed dust.

NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.

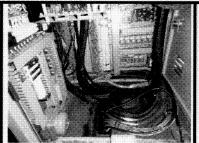


NWest Project Number: 34699 Date: February 8, 2018

Photo Plate



Photo of NOPA posted on work site.



Example of dust cleaned from a console.



Example of dust removed from a console.



Example of cleaned surfaces in the Wheelhouse



Photo of sampling location.



Photo of sampling location.

Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Technologist

Asbestos-containing cables were discovered in the Wheelhouse consoles, triggering NWest to assess the latent dust. NWest collected surface wipe samples and found the dust to contain asbestos. The consoles are regularly accessed and are open to the Wheelhouse (i.e. share an air space), therefore, cleaning of the consoles was undertaken to reduce the risk of fibres becoming airborne during normal vessel operations.

NWest conducted a Final Visual Inspection and clearance sampling. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Worker breathing zone (Occupational) samples and Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities which have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.



Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699 Date: February 8, 2018

neelhouse air samples: Occupationalss – 3469 nks – 34699-3, 4, and 9.	99-1 and 34699-2. Air clearances – 34699-11 and 34699-12. Field
Name and signature of the consultant who collected the air clearance samples	Technologist
Reviewed by	Senior Project Manager
	Qualified Person as per OHS Reg 6.1



Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX A - Field Reports



ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

	North West FINAL VISUA				ABATEMENT AL INSPECTION THE INDUSTRIAN	N CH	ECKI	LIST
Date: Les 6	,2018	Time: C	1910	Co	HOLIVE (Inspector: K.O.
Site:				Pre Rs	esent at Inspection	n: KC Hz 7M). (). ((ta)	IWest)
Project:	Bar/ bett	Pust,	4 batemet	Sul	omitted to:			
Location:	1) Wheel A 2) Laurd 1	louse a Rosa	n	Ins	pection Report N	o.: <i>/</i> ,	2.	
Number of Ins				□ 2	3 4	□ 5		
Comments: Aome u ledge of	wheel how	on u	ind.		Verified to be Complete by Contractor	•	ked by ing O	y Representative of wner
				(Initial of Sup't)	Yes (Y)	No (N)	Action Taken	
General								
Is all equip	Is all equipment removed from area?					/		
Is all asbestos within scope removed?					*		Dust remain	
All ACM W	aste removed	from area	?					in areas
Is area ready for barriers to be removed to critical barriers?			al 		* /		in areas artificult to reach.	
Is load-out, decon, and equipment room free of debris and waste?					/		*Pending AC results	
Is area ready for encapsulation?						NA	1630 (1.	
Do Negative Air Machines have sufficient DOP tests?					A A A A	NA		
Enclosure	Enclosure							
Negative pressure (where applicable) at min0.03 in.w.g.			.03			NA		
All enclosures intact and properly sealed					/			
Space vacuumed with certified HEPA vacuum only			nly					
Poly wiped clean (free from removable residue)								
Negative air machine (where applicable) wiped down						NA		
Discharge	hoses clean ar	nd free of	perforations				MA	•
All waste re	emoved from s	space				/		4
bagged	tools and equ					WAR	NA	*
Dust and Det	oris: Vertical a	nd horiz	ontal surface	es				
Window sil	ls and tracks						1	
Walls and	doors		THE STATE OF THE S			J		



Page 1 of 3

Form: IC1.V0.A-12/10/16

ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

	00010111007 2010
Tops of baseboards	NA
Tops of doors, hinges and frames	<i>J.</i>
Door frames pockets	
Wall mounted fixtures	
Floors including all corners and spaces behind doors	



Page 2 of 3

Form: IC1.V0.A-12/10/16

ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

OB	SERVATIONS	RECOMMENDATIONS/ INSTRUCTIONS	DATE RECTIFIED/
			INSPECTOR'S INITIALS
1.	Location: wheel there		
	a. Upper lodge of cabinat infarior doors are refaining	· Rectified on site	K.a.
	b. Capputo frem of dust and debris. all surfaces are dust free	•	K10.
_	C.	•	
<u>2.</u>	Location: Laundry form	· · · · · · · · · · · · · · · · · · ·	
	a. Area is dust + debi. +	•	لمير
	b. Laundy machine have per me hared to painon		KA
	c .	• • • • • • • • • • • • • • • • • • •	
3.	Location:		
	d.	•	
	е.	•	
	f.	•	
4.	Location:		
	a.		
	b.		
	C.		
ı			



Page 3 of 3

Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX B – Analytical Results



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N.W. North West

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Air Sample Report

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 06, 2018

Project number: 34699 Client Job or PO#: NEED

nent	pr, ng ng nfaces et and in	ng ng ng nfaces et and in			
Comment	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse			
LOQ	٧	٧			·
٧/٧	>	}			3
Concen. v/vv LOQ	0.084	<0.01	<0.01	<0.01	<0.01
Density Concen. (flb/mm2)	16.56	1.27	0.00	2.55	2.55
Volume (L)	76.2	152,4	0	0	100 2456.26
# Fields	100	100	100	100	100
# Fibres	13.0	1.0	0.0	2.0	2.0
Time (Mins)	30	09	0	0	191
Time Off	14:21	16:10	00:00	00:00	12:28
Time On	13:51 14:21	15:10	00:00	00:00	09:17
Avg. Flow Rate (Ipm)	2.54	2.54	0	0	12.86
Type* Analyst	BR	BR	BR	BR	OC.
Type*	330	2200	ည	သ	AC
Area	34699-1a Feb-04-2018 Feb-05-2018 (OCC) Occupational	34699-2a Feb-04-2018 Feb-05-2018 (OCC) Occupational	34699-3a Feb-04-2018 Feb-05-2018 (QC) Field Blank	Feb-04-2018 Feb-05-2018 (QC) Field Blank	34699-5a Feb-06-2018 Feb-06-2018 Room on Upper Deck
Date Analysed	Feb-05-2018	Feb-05-2018	Feb-05-2018	Feb-05-2018	Feb-06-2018
Date Collected	Feb-04-2018	Feb-04-2018	Feb-04-2018	Feb-04-2018	Feb-06-2018
Sample No	34699-1a	34699-2a	34699-3a	34699-4a	34699-5a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



1/2

LAB# 202314

	Analysed Analysed	Area G	٤	Type* Analyst	\$2	ξå	įš	ů E E	# Fibres	* 5 5		Density Concen. v/vv LOQ (fib/mm2) (fib/mL)	10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	} }	Š	t and a second
- 1					<u>E</u>											
ਚ	9-06-2018	34699-6a Feb-06-2018 Feb-06-2018 Room on Upper Deck	υ	Ą	12.86	09:17	12:28	191	1.0	100	2456.26	1.27	10.0>	≩	V	
(3)	6-06-2018	34699-9a Feb-06-2018 Feb-06-2018 (QC) Field Blank 1)	ar	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
	eb-06-2018	34699-11a Feb-06-2018 Feb-06-2018 (AC5 PCM) Wheelhouse C	AC	O.	12.52	09:55	13:10	195	7.5	100	2441.4	9.55	<0.01	>	٧	
	sb-06-2018	34699-12a Feb-06-2018 Feb-06-2018 Wheelhouse C	AC	Q.	12.52	09:55	13:10	195	4.0	100	2441.4	5.10	<0.01	W 10.0>	٧	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



AIMA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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Canadian Coast Guard
CCGS Bartlett – Wheelhouse and Consoles

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX C - Notice of Project for Asbestos (NOPA)





WORKING TO MAKE A DIFFERENCE

Notice of Project

NOP Confirmation number: E768383

Owner information

Account #:

Name:

Victoria Coast Guard Base

Country:

Canada

Address:

25 Huron Street

City:

Victoria

Province:

British Columbia

Postal code:

Prime contractor or employer information

Account #:

Name:

Country:

Canada

Address:

City:

Province:

Name:

British Columbia

Postal code:

Person in charge of project

Name:

Job title:

Operations Manager

Email:

info@haz-mat.ca

Phone number:

(250) 891-8611 Ext:

Fmail:

info@haz-mat.ca

Phone number:

Person completing this form

(250) 891-8611 Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

NOP Confirmation number:

E768383

Asbestos, Lead or Other Similar Exposure Work Activity

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #:

968887

Name:

Canadian HAZ-MAT

Environmental Ltd

Country:

Canada

Address:

1111 Tulip Ave

City:

Victoria

Province:

British Columbia

Postal code:

V8Z 7Z2

Hours of work

Hours of work

from:

08:00

Name(s):

Yes

other similar exposure work activity

Attachments: Delivery method:

Consulting firms

E-Mail

Sent date:

2018/02/01

Northwest Environmental

Required documents and additional information to be

submitted for a project involving asbestos, lead or

Planned activity for a building or structure that contains asbestos materials or where asbestoscontaining material has been processed, manufactured or stored

Demolition:

Repair:

Yes

2/1/2018

WorkSafeBC Online - Notice of Project

Hours of work to: 16:00

Number of workers per shift

Total:

Renovation or alteration: Encapsulation:

Activity type involving asbestos-containing material

Yes

Removal:

Enclosure:

Encapsulation: Yes

Asbestos Work Activity Level Risk level is: Moderate

Lead project information (required only when completing a lead project)

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: **E768383**

Project site locations

Site Location Start date Project city Duration Unit Project site location

1 2018/02/04 Victoria 3 Days Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email:

prevnop@WorkSafeBC.com

(if your attachments are over 10 MB, send multiple emails or email us for further

instructions)

Fax:

604.276.3247

Mailing address:

WorkSafeBC, Prevention Division

PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone:

604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email:

prevnop@WorkSafeBC.com

201-415 Gorge Road E Victoria, B.C. V8T 2W1

Tel: 250-384-9695 Fax: 250-384-9865 E-mail: Northwest@nwest.bc.ca



February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard

25 Huron Street, Victoria BC

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Machinery Control Room (MCR) Stores and MCR Console. 25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 7, 2018	
Address of the abatement project	CCGS Bartlett – MCR Console and MCR Stores 25 Huron Street, Victoria BC	
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd	
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"	

Contractor Scope of Work

MCR Console:

Remove asbestos-containing dust from all accessible surfaces within the console. Cut asbestos-containing cables at the opening of the conduit from the engines and seal the openings. Bag and remove the cables as asbestos waste. Clean the exterior of the console casing. Moderate risk clean-up of dusty surfaces.

NOTE 1: the intent of this work was not to remove all observable dust, but to remove all accessible, loosely adhered gross contamination from within the consoles and to clean all surfaces in the MCR in order to reduce the amount of loose material that may be rendered airborne during normal vessel operations. Abatement workers were required to gently vacuum cables and electrical components within the consoles; they were not permitted to handle cables beyond this to remove concealed dust.

NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.

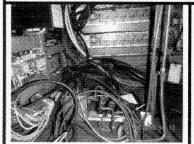
MCR Store:

Remove asbestos-containing rope gasket/packing from the storage room. Clean all surfaces on the shelving unit following moderate risk procedures.

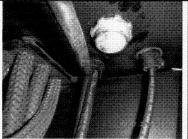


NWest Project Number: 34699 Date: February 8, 2018

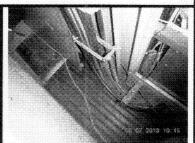
Photo Plate



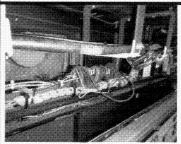
MCR: Accessible surfaces in console cleaned.



MCR: Example of conduit opening.
Asbestos-containing cables
removed and the conduit opening
sealed.



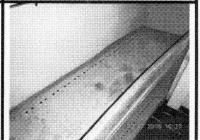
MCR: Deck and first foot of cables behind the console were cleaned.



MCR: Accessible surfaces in backside of console cleaned.



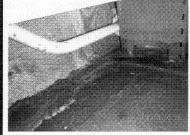
MCR: Air clearance samples.



MCR Stores: Asbestos-containing materials removed and shelving cleaned.



MCR Stores: Boxes and other materials to remain were vacuumed.



MCR Stores: Deck beneath shelving cleaned.



MCR Stores: Air clearance samples.

Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	Technologist



Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

Date: February 8, 2018

NWest Project Number: 34699

Bulk sample of stored gaskets identified asbestos-containing rope gasket/packing materials. The asbestos-containing gaskets have been exposed in the MCR Stores for an unknown length of time. This warranted efforts to remove all dust and debris from MCR Stores and MCR Console area.

NWest conducted a final clearance inspection and Final Visual Inspection. The work appeared to have been conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Half-face Air Purifying Respirators were observed during asbestos abatement activities which have a maximum use concentration of 1 fibre/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.

Name and signature of the consultant who collected the air clearance samples				
	Technologist			
Reviewed by				
DE CONTROLLA CONTROLLA DE CONTROLLA DE	Senior Project Manager Qualified Person as per OHS Reg 6.1			



Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX A - Field Reports



ASBESTOS ABATEMENT INSPECTIO NORTH WEST ENVIRONMENTAL GR					September 2016
North West Environmental Group Ltd.	FINAL VISUA	ABATEMENT AL INSPECTION THE INDUSTRIAL	N CH	ECK	LIST
Date: 76 7. 2018 Time:	1000. Co	Contractor: Canadian Research Present at Inspection: K.O.			Inspector: K.O.
		esent at Inspectio	Dano.		
		Submitted to:			
Location: 1) Het Control. 2) Nek Stores.		spection Report N	o.: #	3, 4	<i>f</i>
Number of Inspection (prior to passing	p): 🗆 1 🗀 2	2 3 4	□ 5	***************************************	the state of the s
Control parel are connected.		Verified to be Complete by Contractor	Checked by Representative of Building Owner		
		(Initial of Sup't)	Yes (Y)	No (N)	Action Taken
General			16		
Is all equipment removed from are	a?				
Is all asbestos within scope remove	ed?			1	
All ACM Waste removed from area	1?				1('a/=
Is area ready for barriers to be removed to critical barriers?				NA	no barriers.
Is load-out, decon, and equipment debris and waste?	room free of		/		no decon.
Is area ready for encapsulation?		ļ	NA	·	
Do Negative Air Machines have su tests?			数		
Enclosure					NA
Negative pressure (where application.w.g.	ole) at min0.03			MA	-space is cleared visually dust and debits
All enclosures intact and properly s				cleaned	
Space vacuumed with certified HE	PA vacuum only		/		visually
Poly wiped clean (free from removable residue)			<u> </u>	NA	dust and debits
Negative air machine (where applicable) wiped down				MA	free
Discharge hoses clean and free of			NA	Pavels on 0	
All waste removed from space			V		confise parce
Remaining tools and equipment wi bagged			NA	Pavels on control pavel are removed for inspection.	
Dust and Debris: Vertical and horiz	ontal surfaces			i	
Window sills and tracks					
Walls and doors			1		1



Page 1 of 3

Form: IC1.V0.A-12/10/16

ASBESTOS ABATEMENT INSPECTION REPORT

OH TH WEST ENVIRONMENTAL GROUP LTD.	September 2016
Tops of baseboards	NA
Tops of doors, hinges and frames	
Door frames pockets	
Wall mounted fixtures	
Floors including all corners and spaces behind doors	



Page 2 of 3

Form: IC1.V0.A-12/10/16

ASBESTOS ABATEMENT INSPECTION REPORT NORTH WEST ENVIRONMENTAL GROUP LTD.

September 2016

OBSERVATIONS	RECOMMENDATIONS/	DATE				
	INSTRUCTIONS	RECTIFIED/				
		INSPECTOR'S				
_		INITIALS				
1. Location: Mek Control Panel - Bartlett a. Space is cleam. " free at last - libris.						
a. Space is cleam	" free of lust + libris					
a. Space is cleam panel has been thoroughly		Ko.				
b.	•					
C.						
- -		and the state of t				
		1				
2. Location: Her Stone Poor	in - Bastlett	· · · · · · · · · · · · · · · · · · ·				
" some go asome						
Shelf ikens have been remove free of dust , debis.	-					
b		1				
C .						
40000						
3. Location: Process Comm	Cables - Bactlett					
d. Cahl ands have been						
3. Location: Engine Poon d. Cable ends have been caultal + taped. Free of dust + debn's.						
Concern & Francis		Ko.				
the of dust + debns.						
e.	•					
-						
f.	•					
4. Location:						
a.						
b.						
C .	•					



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Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX B - Analytical Results



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N.N. North West Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 08, 2018

Client Job or PO#: NEED

Project number: 34699

	vs —	vs			T
Comment	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse			
700	٧	٧			٧
v/v	>	}			≯
Concen. v/vv LOQ (fib/mL)	0.084	<0.01	<0.01	<0.01	<0.01
Density Concen. (fib/mm2) (fib/mL)	16.56	1.27	00.0	2.55	2.55
Volume (L)	76.2	152.4	0	0	100 2456.26
# Fields	100	100	100	100	100
# Fibres	13.0	1.0	0.0	2.0	2.0
Time (Mins)	30	09	0	0	191
Time Off	14:21	16:10	00:00	00:00	12:28
Time On	13:51	15:10	00:00	00:00	09:17
Avg. Flow Rate (Ipm)	2.54	2.54	0	0	12.86
Analyst	BR	BR	BR	BR	e
Type*	330	220	ჯ	ებ	AC
Area	34699-1a Feb-04-2018 Feb-05-2018 (OCC) Occupational	34699-2a Feb-04-2018 Feb-05-2018 (OCC) Occupational	34699-3a Feb-04-2018 Feb-05-2018 (QC) Field Blank	Feb-05-2018 (QC) Field Blank	34699-5a Feb-06-2018 Feb-06-2018 Room on Upper Deck
Date Analysed	Feb-05-2018	Feb-05-2018	Feb-05-2018		Feb-06-2018
Date Collected	Feb-04-2018	Feb-04-2018	Feb-04-2018	Feb-04-2018	Feb-06-2018
Sample No	34699-1a	34699-2a	34699-3a	34699-4a	34699-5a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS

LAB# 202314

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- Adjanan
Sam
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Comment									/ PAPR / Wiping and Vacuuming Surfaces	/ PAPR / Wiping and Vacuuming Surfaces		
L0Q	٧		٧	V	v	v	×	٧	>	>		
v/w	}		^	*	>	^	>	>	>	>		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.035	0.047	<0.01	<0.01
Density (flb/mm2)	1.27	3.18	9.55	5.10	23.57	18.47	22.93	23.57	7.01	9.55	0.00	00.0
Volume (L)	2456.26	0	2441.4	2441.4	2167.2	2167.2	2167.2	2167.2	78	78	0	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.0	2.5	7.5	4.0	18.5	14.5	18.0	18,5	5.5	7.5	0.0	0.0
Time (Mins)	191	0	195	195	180	180	180	180	30	30	0	0
Time Off	12:28	00:00	13:10	13:10	13:10	13:10	13:10	13:10	11:10	11:10	00:00	00:00
Time On	09:17	00:00	55:60	55:60	10:10	10:10	10:10	10:10	10:40	10:40	00:00	00:00
Avg. Flow Rate (Ipm)	12.86	0	12.52	12.52	12.04	12.04	12.04	12.04	2.6	2.6	0	0
Type* Analyst	Or	ac	Οť	αc	αί	ac	OC	OC	OC	OC	JD	ac
Type*	AC	ებ	AC	AC	AC	AC	AC	AC	220	220	ဘဲ	ည
Area	(AC2 PCM) Laundry Feb-06-2018 Room on Upper Deck	(QC) Field Blank 1	(AC5 PCM) Wheelhouse C	(AC6 PCM) Wheelhouse C	(ACS PCM) MCR Stores	(AC6 PCM) MCR Stores		(AC8 PCM) MCR Control Panel	34699-23a Feb-07-2018 Feb-08-2018 (OCC) Void Space of	34699-24a Feb-07-2018 Feb-08-2018 Bartlett	(QC PCM) MCR	(QC) FB OCC
Date Analysed		Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018
Date Collected	Feb-06-2018	Feb-06-2018	34699-11a Feb-06-2018	34699-12a Feb-06-2018	34699-19a Feb-07-2018	Feb-07-2018	34699-21a Feb-07-2018	34699-22a Feb-07-2018	Feb-07-2018	Feb-07-2018	34699-26a Feb-07-2018	Feb-07-2018
Sample No	34699-6a	34699-9a	34699-11a	34699-12a	34699-19a	34699-20a	34699-21a	34699-22a	34699-23a	34699-24a	34699-26a	34699-27a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

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*Legend and Explanation of Terms

CR - clean room; sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mil

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC -- occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

PROORANO S AINA PROFICIENCY ANALYTICAL TESTING PROGRAMS As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

LAB# 202314

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Canadian Coast Guard
CCGS Bartlett – MCR Console and MCR Stores

NWest Project Number: 34699 Date: February 8, 2018

APPENDIX C - Notice of Project for Asbestos (NOPA)



WorkSafeBC Online - Notice of Project

Account #:

Name:

City:

Province: Postal code:

Country: Address:



Notice of Project

NOP Confirmation number:

E768383

Owner information

Account #:

Name:

Victoria Coast Guard Base

Country:

Canada

Address:

25 Huron Street

City:

Victoria

Province: Postal code:

British Columbia

Person completing this form

Prime contractor or employer information

Canada

Name:

Email: Phone number: info@haz-mat.ca

British Columbia

(250) 891-8611 Ext:

Person in charge of project

Name:

Job title: Email:

Operations Manager info@haz-mat.ca

Phone number:

(250) 891-8611 Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents:

Delivery method:

E-Mail

Sent date:

2018/02/01

NOP Confirmation number:

E768383

Asbestos, Lead or Other Similar Exposure Work Activity

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work activity

Account #:

968887

Name:

Canadian HAZ-MAT

Environmental Ltd

Country:

Canada

Address:

1111 Tulip Ave

City:

Victoria

Province:

British Columbia

Postal code:

V8Z 7Z2

Hours of work

Hours of work

08:00

from:

Consulting firms

Name(s):

Northwest Environmental

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

Planned activity for a building or structure that contains asbestos materials or where asbestoscontaining material has been processed, manufactured or stored

Demolition:

Repair:

Yes

2/1/2018

WorkSafeBC Online - Notice of Project

Hours of work to: 16:00

Number of workers per shift

3

Total:

Renovation or alteration: Encapsulation:

Activity type involving asbestos-containing material

Removal: Enclosure: Yes

Encapsulation:

Yes

Asbestos Work Activity Level

Risk level is:

Moderate

Lead project information (required only when completing a lead project)

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: E768383

Project site locations

Site Location Start date **Project city** Duration Unit **Project site location**

2018/02/04 Victoria 3 Victoria Coast Guard Base 25 Huron Street Days

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email:

prevnop@WorkSafeBC.com

(if your attachments are over 10 MB, send multiple emails or email us for further

instructions)

Fax:

604.276.3247

Mailing address:

WorkSafeBC, Prevention Division

PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone:

604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email:

prevnop@WorkSafeBC.com

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201-415 Gorge Road E Victoria, B.C. V8T 2W1

Tel: 250-384-9695 Fax: 250-384-9865 E-mail: Northwest@nwest.bc.ca



February 10, 2018

NWest Project Number: 34699

Canadian Coast Guard 25 Huron Street, Victoria BC

23 maron street, rictoria se

Asbestos Air and Visual Clearance Document

Site:

CCGS Bartlett Void Space Under Wheelhouse 25 Huron Street, Victoria, BC.

North West Environmental Group Ltd (NWest) Scope of Work:

- Collect occupational samples in personal breathing zone of workers during cleaning activities.
- Conducted Final Visual Inspection to ensure scope of work had been completed.
- Performed air clearance samples upon successful completion of the Asbestos Abatement work.

Date of Removal	February 7, 2018	
Address of the abatement project	CCGS Bartlett – Void Space Under Wheelhouse 25 Huron Street, Victoria BC	
Name of the abatement contractor	Canadian Haz-Mat Environmental Ltd	
Hazmat Survey	"34699 RA1 V1.0 - CCGS Bartlett Dust Abatement"	

Contractor Scope of Work:

Remove asbestos-containing dust from all accessible surfaces. Remove exposed fibrous insulation. Moderate risk clean-up of dusty surfaces. Cables were not handled to remove dust concealed between cables.

NOTE: Bundled cables are not free of asbestos-containing materials or dust. Asbestos-containing cables may still be present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working with cable bundles. At minimum, a half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker contamination must be used.



Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699 Date: February 9, 2018

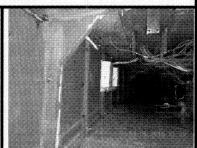
Photo Plate



Negative air unit venting to exterior of ship.



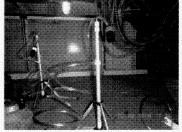
Example of dust cleaned from the surface of cables.



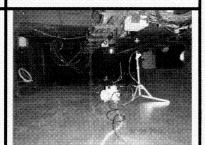
Example of dust removed from the work area.



Example of dust removed from the work area. Exposed fibrous insulation removed.



Sampling location.



Sampling location.

Notice of Project — Asbestos	NOPA E768383
Waste manifest documentation	BP16288-2
Consultant that performed the final visual inspection	ſechnologist

The presence of asbestos containing cables and dust was found in the Wheelhouse consoles. Some consoles have unsealed penetrations into the Void space, effectively sharing the same air space. Asbestos-containing cables may be present in the Void space.

NWest conducted occupational sampling, a final clearance inspection, and final visual inspection. The work was conducted in accordance with regulatory requirements for asbestos abatement and in accordance with report "34699 RA1 V1.0 - CCGS Bartlett Dust Abatement".

Air Samples

Occupational and Air Clearance samples were collected and the airborne fibre levels in the work area were all within permissible limits. Powered Air Purifying Respirators (PAPRs) were used during asbestos abatement activities which have a maximum use concentration of 10 fibres/cubic centimetre of air (f/cc).

WorkSafeBC has determined that 1/5th of the permissible concentration (PC) for asbestos (0.02 f/cc) as an acceptable level to which unprotected workers may be exposed upon completion of abatement activities. All samples have been catalogued and will be stored at the office of North West Environmental Ltd. for a period of ninety days.



NWest Project Number: 34699

Date: February 9, 2018

Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

Void Space air samples: Occupationals – 34699-23 and 34699-24. Air clearances – 34699-28, 29, and 31. Field blanks – 34699-27 and 34699-30.

Name and signature of the consultant who collected the air clearance samples

Technologist

Reviewed by

Senior Project Manager
Qualified Person as per OHS Reg 6.1



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Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699 Date: February 9, 2018

APPENDIX A – Field Reports





ASBESTOS ABATEMENT CHECKLIST FINAL VISUAL INSPECTION CHECKLIST

Environ		oup Ud.	(FOR USE BY T			AL CONSULT	'ANT)
Date: Alb 8	, 201			Proje	ct num	iber: 34	499
Time on/off site:	73:	70	NWest represe	entative(s):	17	/ ₀	
Report number:	5		Site address/lo	ocation:	7	C63-	Bartett
Weather:			, Sung	Contracto Name:	r/Repr	esentative	NA pore on site
Client and contact	name:	CCG - 1 Uztl	white	Number o workers o		ment	was 3
~Volume of Contai	nment:	4540	μ ³	Number o units in u		tive air	
Work Zone Locatio	n:	101016	4. 11.04				***************************************
RESULTS:		***************************************	PASSED. See obs	ervations	and i	nstruction	s below.
Number of Inspecti	ian (orio	to passine)	П1 П2 П	з П4	П5		
Checked by Repres				 3			
General				Yes (Y)	No (N)		Observations
All equipment r	emoved	from area					
All asbestos wit	hin scop	e removed froi	m the substrate				
All ACM Waste	removed	from contains	ment	1			
Area is ready fo	r barrier	s to be remove	' d	V.		0441 6	c clared.
Checked by Repres	ientative	of Building O	wner				
Enclosure				Yes (Y)	No (N)		Observations
		sace from Af Ass				Speci	s clian.
Decontamination	on chaml	zena niee un uu:	si, dedris and Wasie		•		
Decontamination			st, deoris and waste			NA	
	encapsul	ation				1/4	
Area ready for o	encapsul achines h	ation ave sufficient				NA NA	
Area ready for o	encapsul achines h ure (whe	ation lave sufficient re applicable) a	DOP tests at min0.03 in.w.g.				
Area ready for o Negative Air Mi Negative pressu	encapsul achines h ure (whe ntact and	ation nave sufficient re applicable) a I properly seal	DOP tests at min0.03 in.w.g. ed				

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NWEST FINAL VISUAL NSPECTION REPORT SITE ADDRESS/LOCATION:

PROJECT NUMBER: REPORT NUMBER:

Enclosure	Yes (Y)	No (N)	Observations
Negative air machine (where applicable) wiped down			outside
Discharge hoses clean and free of perforations	,		NA, sots do
All waste removed from space			
Remaining tools and equipment wiped down or bagged			NONE IN Space
Window sills and tracks free from debris		,	NA
Walls and doors free from dust and debris			
Tops of baseboards free from dust and debris		,	NA
Tops of doors, hinges and frames free from dust and debris			
Door frame pockets free from dust and debris			
Wall/Ceiling mounted fixtures free from dust and debris			NA Some dust in
Floors including scaffolding walk boards free from dust and debris	/		aven.
instructions for Contractor:			Contractor Representat Signature:
Space is dear and thee at de 1. insulation have been removed	bris from	val	ll l
2.			
3 .			
4.			· .

END OF DOCUMENT



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Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699 Date: February 9, 2018

APPENDIX B - Analytical Results



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de la Loi sur l'accès à l'info Information Act / Document

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N.N. North West 2 Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Dust Abatement Monitoring

Date: February 09, 2018

Project number: 34699 Client Job or PO#: NEED

Comment	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse	Apr, vacuuming and wiping down surfaces in cabinet and consoles in wheelhouse			
õ	٧	٧			٧
%/	>	}			3
Concen. (flb/mL)	0.084	<0.01	<0.01	<0.01	<0.01
Density Concen. v/vv LOQ (flb/mm2) (flb/mL)	16.56	1.27	00.0	2.55	2.55
Volume (L)	76.2	152.4	0	0	2456.26
# Fields	100	100	100	100	100
# Fibres	13.0	1.0	0.0	2.0	2.0
Time (Mins)	30	09	0	0	191
Time Off	14:21	16:10	00:00	00:00	12:28
Time On	13:51	15:10	00:00	00:00	09:17
Avg. Flow Rate (Ipm)	2.54	2.54	0	0	12.86
Type* Analyst	ВК	BR	BR	BR	OC
Type*	200	200	ЭÒ	ဘဲ	AC
Area	34699-1a Feb-04-2018 Feb-05-2018 (OCC) Occupational	34699-2a Feb-04-2018 Feb-05-2018 (OCC) Occupational	Feb-04-2018 Feb-05-2018 (QC) Field Blank	34699-4a Feb-04-2018 Feb-05-2018 (QC) Field Blank	34699-5a Feb-06-2018 Feb-06-2018 Room on Upper Deck
Date Analysed	Feb-05-2018	Feb-05-2018	Feb-05-2018	Feb-05-2018	Feb-06-2018
Date Collected	Feb-04-2018	Feb-04-2018		Feb-04-2018	Feb-06-2018
Sample No	34699-1a	3469 9 -2a	34699-3a	34699-4a	34699-5a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this



PAT PROGRAMS.

AIHA PROFICIENCY ANALYTICAL TESTING PROCRAMS

LAB# 202314

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Comment									/ PAPR / Wiping and Vacuuming Surfaces	PAPR / Wiping and Vacuuming Surfaces				Fitter Blow Out, No Result Possible	
ro6	٧		v	·	٧	v	٧	v	v	٧			٧		
A/w 100	3		>	≩	>	>	>	>	>	>			₹		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.035	0.024	<0.01	<0.01	<0.01	N/A	<0.01
Density (fib/mm2)	1.27	3.18	9.55	5.10	23.57	18.47	22.93	23.57	7.01	9.55	00:0	00.00	1.27	N/A	00'0
Volume (L)	2456.26	0	2441.4	2441.4	2167.2	2167.2	2167.2	2167.2	78	156	0	0	2252.28	N/A	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.0	2.5	7.5	4.0	18.5	14.5	18.0	18.5	5.5	7.5	0.0	0.0	1.0	0.0	0:0
Time (Mins)	191	0	195	195	180	180	180	180	30	09	0	0	137	N/A	0
Time Off	12:28	00:00	13:10	13:10	13:10	13:10	13:10	13:10	11:10	11:40	00:00	00:00	16:10	N/A	00:00
Time On	09:17	00:00	93:55	55:60	10:10	10:10	10:10	10:10	10:40	10:40	00:00	00:00	13:53	13:57	00:00
Avg. Flow Rate (ipm)	12,86	0	12.52	12.52	12.04	12.04	12.04	12.04	2.6	2.6	0	0	16.44	16.43	0
Analyst	OC	or	OC	ОС	ac	ar	O.	OC	ac	Ωſ	ac	ar	BR	BR	BR
Туре*	AC	ည	AC	AC	AC	AC	A C	AC	220	330	သ	ည	AC	AC	χ,
Area	(AC2 PCM) Laundry Room on Upper Deck	(QC) Field Blank 1	(AC5 PCM) Wheelhouse C	(AC6 PCM) Wheelhouse C	(AC5 PCM) MCR Stores	(AC6 PCM) MCR Stores	(AC7 PCM) MCR Panel Control	(AC8 PCM) MCR Control Panel	(OCC) Void Space of Bartlett	(OCC) Void Space of Bartlett	(QC PCM) MCR	ээо вы (эб)	(AC1) Voidspace Below Wheelhouse	(AC2) Voidspace Below Wheelhouse	(QC) Field Blank
Date Analysed	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018	Feb-08-2018
Date Collected	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-06-2018	Feb-07-2018	Feb-07-2018	Feb-07-2018	34699-22a Feb-07-2018	34699-23a Feb-07-2018	34699-24a Feb-07-2018	Feb-07-2018	34699-27a Feb-07-2018	Feb-08-2018	34699-29a Feb-08-2018	34699-30a Feb-08-2018
Sample No	34699-6a	34699-9a	34699-11a	34699-12a	34699-19a	34699-20a	34699-21a	34699-22a	34699-23a	34699-24a	34699-26a	34699-27a	34699-28a	34699-29a	34699-30a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS

LAB# 202314

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Volume Density Concen. v/vv LOQ Comment (L) (fib/mm2) (fib/mL)	
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<u>}</u>	≩
E C C C C C C C C C C C C C C C C C C C	<0.01 W
Demaity (flb/mm.2)	1.27
) ()	100 2413.32
* 3 * 3 # 3 # 3	100
* 🖁	1.0
	182
Time Time Off (Mins)	13:57 16:59
	13:57
Pare (13.26
fype* Analyst	BR
₹ A	AC
2	34699-31a Feb-08-2018 Feb-08-2018 Below Wheelhouse
Date Analysed	Feb-08-2018
Oollected Collected	Feb-08-2018
Sample No	34699-31a

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

PAT PROGRAMS
AHA PROFIDENCY ANALYTICAL TESTING PROGRAMS

1

LAB# 202314

000727

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Canadian Coast Guard
CCGS Bartlett – Void Space Under Wheelhouse

NWest Project Number: 34699 Date: February 9, 2018

APPENDIX C - Notice of Project for Asbestos (NOPA)





Notice of Project

NOP Confirmation number:

E768383

Owner information

Account #:

Name:

Victoria Coast Guard Base

Country:

Canada

Address:

25 Huron Street

City:

Victoria

Province:

British Columbia

Postal code:

Address:

City:

Province:

Prime contractor or employer information

Canada

Postal code:

Account #:

Name:

Country:

Person in charge of project

Name:

Job title: Fmail:

Operations Manager info@haz-mat.ca

Phone number:

(250) 891-8611 Ext:

Person completing this form

Name:

Email:

Phone number:

info@haz-mat.ca

British Columbia

(250) 891-8611 Ext:

Has a prime contractor agreed in writing with the owner to be the prime contractor?

Required documents and additional information to be submitted

Additional documents:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

NOP Confirmation number:

E768383

Asbestos, Lead or Other Similar Exposure Work Activity

Asbestos, lead or other similar exposure work activity (OH&S Regulation 20.2.1) - At least 48 hours notice required.

Employer responsible for the work involving asbestos, lead or other similar exposure work

activity

Account #:

968887

Name:

Canadian HAZ-MAT

Environmental Ltd

Country:

Canada

Address:

1111 Tulip Ave

Victoria

City: Province:

British Columbia

Postal code:

V8Z 7Z2

Hours of work

Hours of work

08:00

from:

Consulting firms

Name(s):

Northwest Environmental

Required documents and additional information to be submitted for a project involving asbestos, lead or other similar exposure work activity

Attachments:

Yes

Delivery method:

E-Mail

Sent date:

2018/02/01

Planned activity for a building or structure that contains asbestos materials or where asbestoscontaining material has been processed, manufactured or stored

Demolition:

Repair:

Yes

2/1/2018

WorkSafeBC Online - Notice of Project

Hours of work to: 16:00

Number of workers per shift

Total:

Renovation or alteration: Encapsulation:

Activity type involving asbestos-containing material

Removal:

Yes

Enclosure:

Encapsulation:

Yes

Asbestos Work Activity Level Risk level is: Moderate

Lead project information (required only when completing a lead project)

Lead abatement:

Significant disturbance of lead-containing materials:

Other similar exposure work activity with significant risk of occupational disease from biological or chemical agent, or ionizing radiation

Other significant risk of occupational disease:

Other significant risk of occupational disease explanation:

NOP Confirmation number: E768383

Project site locations

Site Location Start date Project city

Duration

Unit

Project site location

1

2018/02/04

Victoria

3

Days

Victoria Coast Guard Base 25 Huron Street

Please note that if the information on the NOP significantly changes, the new information must be submitted to WorkSafeBC as soon as possible and posted at the project site.

To send required documents, additional information or changes to the NOP information to WorkSafeBC, along with your NOP confirmation number E768383 and a brief project site description:

Email:

prevnop@WorkSafeBC.com

(if your attachments are over 10 MB, send multiple emails or email us for further

instructions)

Fax:

604.276.3247

Mailing address:

WorkSafeBC, Prevention Division

PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5

Questions?

If you have any questions or issues with the NOP form, please contact Prevention Support Services at:

Telephone:

604.276.3100 in the Lower Mainland, or 1.888.621.7233 Toll Free in BC

Email:

prevnop@WorkSafeBC.com

Prepared for: Canadian Coast Guard Services

CCGS BARTLETT

Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments Limited Hazardous Materials

Project: 34699 RA1 V1.0

Issue date: February 2, 2018



201 - 415 Gorge Road East

Victoria, BC

V8T 2W1

CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

Contents		
1 Ba	Background and Scope of Work1	
1.7	Wheelhouse and Consoles	
1.2	Laundry Room 3	
1.3	Void Space Under Wheelhouse	
4.1	MCR Console 5	
1.5	MCR Stores	
1.6	Additional Requirements 6	
2 Ph	Photo Plate	
3 Va	Validation	
Append	Appendix A. Analytical Reports	



Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1 Background and Scope of Work

(LHMA) in accordance with WorkSafeBC regulatory requirements outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 - Hazardous North West Environmental Group Ltd. (NWest) was retained by the Canadian Coast Guard (CCG, the Client) to conduct a limited hazardous materials assessment Materials. The LHMA was conducted by NWest representative Jen Taptuna on January 26, 2018.

and accessible areas, excluding behind the washers and dryers due to inaccessibility at the time. As assessment of the dust in these two areas identified the Various areas were found to have asbestos-containing cables. The presence of these cables triggered an assessment of latent dust in Wheelhouse console casings. Concurrently, damage to an asbestos-containing bulkhead panel was identified by CCG crew in the Laundry Room. An abatement contractor cleaned the Laundry presence of asbestos fibres in excess of expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories

The scope of work was provided as follows in the request for quote with additional details provided to the attending technician at the time of this assessment.

efforts behind the washers and dryers. Asbestos in latent dust in the Wheelhouse consoles fell in the high range (>100,000 s/cm²). It is suspected that the asbestos is Asbestos in latent dust in the Laundry room fell in the moderate range (>10,000 to 100,000 structures per square centimetre (s/cm²), warranting additional cleaning a result of pulling asbestos-containing cabling throughout the years. Note that there is no accepted, standardized method of determining the mobility of asbestos fibres from latent dust into the air. The rate of mobility is dependent on various factors. The main factor for mobility on the vessel is vibration and movement during normal at-sea operations, therefore, it has been deemed prudent to remove all loosely adhered and safe to access dust from these areas.

Bulk sampling was undertaken of stored gasket materials in the Machinery Control Room Stores (MCR Stores). Chrysotile asbestos was identified in rope gasket/packing materials. These materials have been stored exposed in the MCR Stores for an unknown length of time. The following document presents a risk assessment and provides safe work procedures for removing asbestos-containing dust from the following locations:

- Wheelhouse and consoles.
- Laundry Room, specifically behind the washers and dryers.
- Void space beneath the Wheelhouse.
- MCR console.
- MCR stores.

Risk assessments and general procedures are based on our understanding of the scope of work and the methods and means intended to be used by the Abatement Contractor. Should the work activity type differ from what is noted herein, a new risk assessment may be required for that activity.



CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

Wheelhouse and Consoles 1.1

Scope of Work

- Remove loosely adhered dust from all surfaces within all consoles.
- Clean all surfaces in the Wheelhouse.
- Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at all Wheelhouse entrances. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- HEPA vacuum and bag curtains and other removable porous materials that will be reused. These items will be laundered prior to reuse.
- 6-mil poly drop sheet around console access to prevent entrainment of dust into the carpet.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within consoles. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum and wipe all surfaces within the Wheelhouse to remove loosely adhered latent dust. Binders/books: only HEPA vacuum the outer surfaces. CAUTION: take care not to change any settings on the control panels.
- HEPA vacuum the carpet using a carpet head attachment.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.2 Laundry Room

Scope of Work

- Remove loosely adhered dust from all surfaces behind the washers and dryers.
- Clean all surfaces in the Laundry Room.
- Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed.

Contractor Requirements

Remove loosely adhered dust from behind washers and dryers and clean all Laundry Room surfaces

- . Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the Laundry Room entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- A pop-up or small enclosure may be constructed in the Alleyway outside the Laundry Room to create more work space. If used, it must not impede worker access through the Alleyway. Coordinate with CCG crew.
- Dismount the washers and dryers to access the space behind them.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces on the back sides of the units and the bulkhead and deck behind. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred
- NWest will conduct an inspection at this time, prior to re-installation of the units.
- Upon successful inspection, reinstall units.
- HEPA vacuum exposed surfaces of the Laundry Room (i.e. do not open millwork to clean surfaces inside as these were cleaned previously)
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake a final inspection and air clearance sampling.



34699 RA1 V1.0 - CCGS Bartlett Dust Abatement

000735

CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

Void Space Under Wheelhouse

Scope of Work

- Remove loosely adhered dust from all surfaces.
- Remove all dust and debris from deck.
- Hazards: Asbestos-containing dust. Vitreous fibres from exposed Fibreglass-type insulation. Red primer assumed to contain lead. Enclosed space with a single entrance/exit.

Contractor Requirements

Remove loosely adhered dust from all surfaces.

- Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance to the void space. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- access/egress of the space. The intent is to pull makeup air into all areas of the space, therefore, the extraction duct or NAU should be placed as far Install a certified negative air unit (NAU) to draw air out of the space. Place it in such a manner as it does not impede regular or emergency from the entrance as practicable to avoid short circuiting.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces in the space. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- Work should start from the entrance and move into the space to reduce the amount of contamination that accumulates on worker's coveralls.
- Note: additional effort may be required to remove all dust from high contact surfaces such as the deck (i.e. remove all dust, not just loosely adhered
- Due to the small volume of the work area and anticipated increased concentration of fibres rendered airborne during cleaning activities, workers must utilize powered air purifying respirators (PAPRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

1.4 MCR Console

Scope of Work

- Remove loosely adhered dust from all surfaces within the console.
- Remove loosely adhered dust from the deck behind the console and from cables running out of the console, up to the first cable tray bracket.
- equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage. Engines or other equipment Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Fragile and sensitive equipment present. Some electrical cabling and may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- 6-mil poly drop sheet around console access.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within and behind console. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum the deck around console openings.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.5 MCR Stores

Scope of Work

- Remove box containing asbestos rope gaskets/packing. Remove any visually similar materials, after confirming with CCG these additional materials can be disposed.
- Clean the shelving unit and adjacent surfaces within three feet.



Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- 5. Moderate risk cleanup activities
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Remove identified bulk materials and place in 6 mil poly bags. Dispose as asbestos waste.
- Remove from the shelving unit each piece of equipment or material to be kept. HEPA vacuum all exterior surfaces and place in the MCR.
- When all items are removed from the shelving unit, HEPA vacuum and damp wipe the shelving unit.
- HEPA vacuum and damp wipe all surfaces behind and adjacent to the shelving unit.
- NWest will undertake an inspection for cleanliness at this time.
- Upon successful inspection, items can be replaced.
- HEPA vacuum the deck.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.6 Additional Requirements

- If suspect materials are discovered during abatement activities that have not been included in this risk assessment, work must stop and the material assessed by a qualified person.
- Submit Notice of Project complete with site specific work procedures to WorkSafeBC no less than 48 hours prior to commencing work
- All HEPA vacuums and NAUs must be certified (DOP/PAO tested) within 12 months of use. Recommend on-site certification to ensure units are functioning properly after transport.



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CCGS BARTLETI February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

- Provide occupational health and safety program including exposure control plans for asbestos, lead, vitreous fibres, and silica as well as procedures for deenergization and lockout if required.
- Provide all first aid for contractor workers.
- alternative respirator cartridges (e.g. nearby welding, chemical applications, or vehicle exhaust). For the purposes of handling the above identified hazardous Other personal protective equipment (PPE) such as safety eyewear, hard hats, or face protection may be required. Site conditions may necessitate the use of materials, all cartridges must utilize P-100 particulate filters, at minimum.
- No wet wiping, wire brushing, or application of liquids to electrical cabling.
- Contractor shall coordinate schedule around the crew's schedule including fueling events, maintenance, practice drills and any other reasonably foreseeable activity. Contractor is responsible for coordination with Chief Engineer and Chief Steward.
- All air sampling to be conducted by NWest.



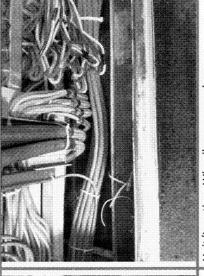
CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

Photo Plate



Unit/Location: Wheelhouse
Description: Overview
Comments: Curtains and other porous items
meant for reuse will be HEPA vacuumed, bagged,
and laundered. HEPA vacuum and wipe all
surfaces.



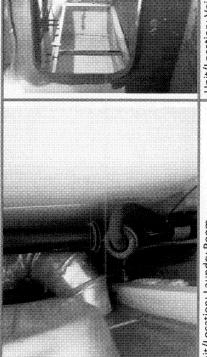
Unit/Location: Wheelhouse console
Description: Overview of typical console
ns
Comments: HEPA vacuum accessible surfaces
vagged, within consoles to remove loosely adhered dust.
Do not wet/damp wipe cables.



Unit/Location: Laundry Room Description: Overview Comments: Units are framed into place.

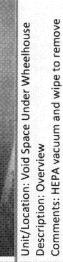


Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

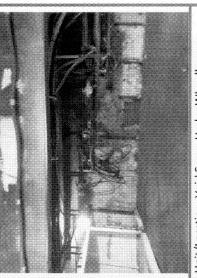


Unit/Location: Laundry Room
Description: Dust behind washers and dryers to be cleaned.
Comments: Remove units and clean backsides of

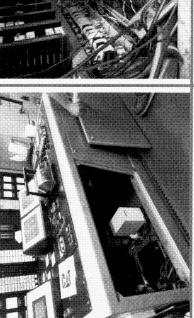
units and the bulkhead and deck



loosely adhered dust.



Unit/Location: Void Space Under Wheelhouse Description: Overview Comments: HEPA vacuum and wipe to remove loosely adhered dust. Fibreglass-type insulation present.



Unit/Location: MCR
Description: Overview
Comments: HEPA vacuum accessible surfaces
within consoles to remove loosely adhered dust.
Do not wet/damp wipe cables.



Unit/Location: MCR
Description: Overview
Comments: HEPA vacuum accessible surfaces
within consoles to remove loosely adhered dust.
Do not wet/damp wipe cables.



Unit/Location: MCR Stores
Description: Asbestos-containing rope
gaskets/packing stored exposed.
Comments: Dispose of ACM, clean shelving and adjacent surfaces within 2 feet.



000741

CCGS BARTLETT February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments

Validation m

occupational hygiene professionals operating in this jurisdiction. No assessment was requested or made of other potential areas of asbestos or lead contamination All work undertaken was conducted according to standardized methods and otherwise in accordance with protocols and procedures currently utilized by that may or may not be present within the vessel.

Signature on file

Project Manager Report author

Signature on file

Qualified Person as per OHS Reg 6.1 Senior Project Manager Report review



Appendix A. Analytical Reports

Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments



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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Officer

Sent:

February-03-18 6:40 PM

To:

John Benckhuysen; Joseph Van Der Sande; CCGS-NGCC, Bartlett Logistics Officer

Subject:

FW: Bartlett Background Testing Update Feb 3

Attachments:

34694 AA2 V1.0 2018-02-02 - CCGS Bartlett Background Testing.pdf

Hello,

Please find attached the preliminary Air Test Results for Asbestos. The results all look good so far. If you have any questions, please let me know.

Chris Couch

Acting Chief Officer, Red Crew, CCGS Bartlett

Email: BartlettCHO@ccgs-ngcc.gc.ca

Chief Officer Cell:
Telus Tellular:

Victoria Base Landline: 250 480 2692

Iridium Satellite:

Fax Satellite:

Mailing Address: 25 Huron Street Victoria BC V8V 4V9

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: February-03-18 2:08 PM

To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer

Subject: FW: Bartlett Background Testing Update Feb 3

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From:

Sent: February-03-18 1:50 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject: Bartlett Background Testing Update Feb 3

Hi Matt, following is an update to our proposal for background testing on the Bartlett.

S:19(1) nent Released Under the Access to |s:[20(1)(b)|on Act / Document divulgué en vertu de la Loi sur l'accès à l'information. s:20(1)(c)

Preliminary air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected in 10 locations throughout the vessel on February 2, 2018 while the vessel was docked alongside, occupied and with systems (e.g. heating and ventilation) operational. All air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). WorkSafeBC has determined the exposure limit for asbestos fibres to be 0.1 fib/ml for an 8 hour day, however, as personnel are on the ship for 24 hours, this is adjusted to 1/10th of that amount, or 0.01 fib/ml (BCOHS 5.50 Extended work periods).

While initial results are encouraging (in that all were reported to be <0.01 fib/ml), the limit of quantitation (LOQ) of the method is not satisfied until enough fiber loading is achieved (100-1300 fib/mm2). In other words, additional ambient air sampling with sampling times of approximately 10 hours at 2.5 LPM is recommended, although if the atmosphere is sufficiently low in fibers-this fiber loading may still be unachievable. However, due to the potential concern and questions likely to raised by affected parties-we recommend that we take longer ambient samples to be prudent. We are undertaking this follow up testing today (Feb 3).

The ambient air sampling will result in additional costs as we had not included overtime rates in our original proposal. We will honour the lower air sample analysis cost of for additional samples required due to site conditions. I estimate today's sampling will add approximately \$3450 to the original proposal of \$7712 with an estimated total of \$11,162, excluding GST.

Results from Feb 2 Air Testing

All fibre concentrations for samples collected on Feb 2 were below the limit of detection (0.01 fib/ml). Lab report attached.

Other Updates

Wipe samples collected Feb 2 will be delivered to the courier today for Monday arrival at the laboratory. We anticipate results by end of day Tuesday. I had was told there was weekend pickup, but it looks like that was incorrect. I will keep you appraised of any changes.

Please let me know if you have any questions.

Best,



Project Manager
North West Environmental Group Ltd.

C. (Primary)

P. 250-384-9695 ext. | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

This message may contain privileged information which is prohibited from disclosure and intended for the named recipient(s) only. If received in error, please contact the sender at North West Environmental immediately and destroy the message and any attachments, copies or printouts.

N.N. North West 2 Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 02, 2018

Project number: 34694 Client Job or PO#: NEED

	Γ		T	Γ	T	Τ	F	T	Γ	Γ-
Comment										
700	٧	٧	٧	٧	٧	٧	٧	٧	٧	v
v/w	3	3	3	≩	≩	≩	3	≩	≩	>
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	9 9'0	5.10	3.82	2.55	3.82	3.18	4,46	4,46	1.91	7.01
Volume (L)	259.08	988.16	947.2	324,36	414.99	1718.7	442.5	481.6	1556.48	358.72
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	6.5	4.0	3.0	2.0	3.0	2.5	3.5	3.5	1.5	5.5
Time (Mins)	127	193	185	159	159	337	177	172	304	152
Time Off	14:12	14:46	14:47	14:01	13:58	16:44	13:56	13:47	16:58	14:19
Time On	12:05	11:33	11:42	11:22	11:19	11:07	10:59	10:55	11:54	11:47
Avg. Flow Rate (ipm)	2.04	5.12	5.12	2.04	2.61	5.1	2.5	2.8	5.12	2.36
Analyst	дſ	JD	ЭD	Ωť	JD	30	OC	JD	OC	92
Туре*	AMB	AMB	AMB	AMB	AMB	AMB	АМВ	AMB	AMB	AMB
Area	(AMB) Control Room	Feb-02-2018 Feb-02-2018 (AMB) Upper Deck	Feb-02-2018 Feb-02-2018 (AMB) Upper Deck Alley FWD	Feb-02-2018 Feb-02-2018 Ollers Aft Cabin	(AMB) Upper Deck Winchman's Cabin	(AMB) Poop Deck Alley	34694-9a Feb-02-2018 Feb-02-2018 Logistic Officer's Cabin	(AMB) Poop Deck Lounge	(AMB) Boat Deck Alley	Feb-02-2018 (AMB) Boot Deck Chief Officer's Cabin
Date Analysed	Feb-02-2018 Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018 Feb-02-2018	Feb-02-2018 Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018
Date Collected	_			Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	34694-10a Feb-02-2018 Feb-02-2018	34694-11a Feb-02-2018	34694-12a Feb-02-2018
Sample No	34694-3a	34694-4a	34694-5a	34694-6a	34694-7a	34694-8a	34694-9a	34694-10a	34694-11a	34694-12a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



1/2

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Sample No No	Collected	Date Analysed	Area	ž.	Type* Analyst	984	<u> </u>	μ̈́δ	1 1 2 1	* É	* Speak	9 1 1 2 2	Volume Density Concen. v/vv LOQ Comment (L) (fib/mm2) (fib/mL)	:(T 000/4 (318)		007	Comment
3a Fel	5-02-2018	Feb-02-2018	34694-13a Feb-02-2018 Feb-02-2018 (QC) Field Blank	<u>ې</u>	l g	0	00:00	00:00	0	0.0	100	0	00:0	<0.01			
3a Fel	5-02-2018	Feb-02-2018	34694-23a Feb-02-2018 Feb-02-2018 (AC) Poop Deck	AC	g	13.56	14:27	16:55	148	6.5	100	2006.88	8.28	<0.0>	>	V	

*Legend and Explanation of Terms

CR - dean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per mi.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

ام م As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

PROGRAMS ATHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

February 25, 2018 3:36 PM

To:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room

Subject:

FW: Dust Wipe Samples

FYI. I didn't know that personal exposure limit testers are available. They may be of value to confirm whether an area we're working in (or sleeping in) is contaminated with ACM.

Note that Gabe is working on buying a couple of air sampling machines for Marine Engineering. Maybe we want to buy a couple for the ship? (Don't know cost)

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: McMillan, Cody [mailto:cody.mcmillan@dfo-mpo.gc.ca]

Sent: February-06-18 1:05 PM

To: CCGS-NGCC, Bartlett Chief Engineer **Subject:** Re: Dust Wipe Samples

One thing to research is personal exposure limit testers, they are little devices you can clip on your belt and will let you know if it senses asbestos

Cody McMillan Marine Engineering/Ingénierie Navale (250) 217 3480

From: CCGS-NGCC, Bartlett Chief Engineer **Sent:** Tuesday, February 6, 2018 4:01 PM

To: McMillan, Cody

Subject: RE: Dust Wipe Samples

Hi Cody,

Things are proceeding. The contractor is currently working the MCR and MCR stores. ER ACM thermocouple wires have been cutback and sealed.

from NWE has just collected the air samples from bridge/laundry so we should have answers for those two spaces (this afternoon). If good the two spaces will be back in operation today and the bridge void will be prepped for work tomorrow morning.

I have asked NWE for a little more details on the air test results from the weekend (no answer yet). Basically what their opinion is on the levels, i.e. it meets WorkSafe permissible exposure limit PEL but without an actual f/ml reading on the results the readings don't mean too much to me. Would ship vibration and movement push us over the limit or are we sufficiently low it would not be a concern(the precision of the results is the maximum PEL for continuous occupied spaces, I would like the profession opinion not just my interpretation of the results). We did run engines and generators

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at varying speeds for apx 2 hours during both sampling periods. Enough vibration was generated it made the computer monitors in my cabins vibrate.

Asked also custodial work performed onboard but since I didn't get a quick response yet I have the ok from the Captain and we are purchasing proper abatement quality heap vacuums to take the place of the non-hepa dyson hand-held vacs. On the off chance we disturb something unknown onboard I would prefer our vacuums do not just make the dust airborne.

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From: McMillan, Cody [mailto:cody.mcmillan@dfo-mpo.gc.ca]

Sent: February-06-18 12:42 PM

To: CCGS-NGCC, Bartlett Chief Engineer **Subject:** Re: Dust Wipe Samples

Thanks Matt. Sounds like things are moving along nicely, how's it look from your prospective?

Cody McMillan Marine Engineering/Ingénierie Navale (250) 217 3480

From: CCGS-NGCC, Bartlett Chief Engineer **Sent:** Tuesday, February 6, 2018 12:47 PM **To:** Chaikin, Gabriel; McMillan, Cody

Cc: CCGS-NGCC, Bartlett Captain Subject: Dust Wipe Samples

Hi,

The dust wipe samples (taken as part of the background sampling plan) from the HVAC return, Engine Room and MCR were held up at the border.... Instead of having result today it will most likely be tomorrow.

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

February 25, 2018 3:51 PM

To:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room FW: Bartlett Asbestos Update - ACM Background - Context Commentary

Attachments:

Subject:

Background Air Testing Results.pdf; Background Testing proposal.pdf; Initial WH Wire Insulation Test Results.pdf; Laundry Room Air Test Results after first cleanup.pdf; Laundry Room Dust Test Results.pdf; NWE Risk Assessment and Safe Work Procedures for abatement work.pdf; Pyrometer Wire and Packing Test Results.pdf; Wheelhouse

Consol Dust Test Results.pdf

Importance:

High

FYI Ross

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: February-05-18 8:03 AM

Cc: Chaikin Gabriel

Subject: Bartlett Asbestos Update

Hi Ross,

I would like to update you on the asbestos situation onboard.

The wire insulation you had tested at the end of you patrol came back positive for Chrysotile asbestos in the insulation (not the insulation covering).

We had NWE come in and perform dust sampling in the wheelhouse consoles to check for contamination. IIR submitted prior to receiving results. There was a mistake at the lab and the first set of samples were not analyzed with the correct procedure.

During a short sea trial period we contacted the dock in way of the aft port hole in the laundry room. Minor deformation of the shell plating but the movement split a bulkhead seam and caused a crack in one of the ACM panels in the laundry room. The space was closed off after discover and Canadian Hazmat called in to clean up and encapsulate. IIR submitted. Post clean-up air test proved good but some dust behind the washing machines was not cleaned so samples were taken to determine if additional cleaning was required. This happened at the same time we found out about the mistake at the lab for our bridge dust samples.

Consoles resampled and results were expected the afternoon after we sailed.

First set of results were received and the dust behind the washing machines showed moderate contamination above normally experienced levels (International Asbestos Testing Laboratories) having not received the results from the bridge the plan was to proceed to the Port Hardy to have additional work performed. We received the results from the Bridge a couple hours later and they return with high levels of contamination in the dust present on the consoles. The decision was made to return to Victoria for further testing and development of an abatement plan.

NWE developed a Background Sampling plan which included dust wipes in the MCR,ER and HVAC return air duct as well as 10 air sampling locations throughout the ship. We are still awaiting the results of the dust wipes (Tuesday morning/afternoon).

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The air sampling results are attached. During both days of air testing the ship was occupied with normal traffic, ventilation systems were operated as per normal, and the main engines and generators were run for apx 2hours each day to increase vibration throughout the ship. As per NWE: As before(the first days lower volume samples) all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

Additional ACM identified: the wiring for the old pyrometer display contains 30% Chrysotile. Packing storage in the STBD MCR some of the old white packing contains 30% Chrysotile.

NWE is providing oversight and air clearance for the following abatement jobs performed by Canadian Hazmat:

- -wheelhouse including consoles
- -wheelhouse void as the console wire ways to this space are not sealed and the space contains significant unidentified dust
- -laundry room (moving machines to continue wipe down)
- -ER pyrometer wire removal
- -MCR console dust and pyrometer wire removal
- -STBD MCR stores disposal of packing and cleanup of adjacent area

The first day of abatement was yesterday with work proceeding on the bridge. As now the anticipated completion time for the clean-up is Friday.

Please let me know you thoughts, comments or concerns. I have cc'd Gabriel as he is taking over from Cody for the week.

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca



201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Air Sample Report

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 03, 2018 Client Job or PO#: NEED

Project number: 34694

Sample No	Date Collected	Date Analysed	Area	Туре*	Analyst	Avg. Flow Rate (Ipm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	n/n	д	Comment
34694-3a	Feb-02-2018	Feb-02-2018	34694-3a Feb-02-2018 Feb-02-2018 (AMB) Control Room	AMB	JD.	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	≯	٧	
34694-4a	34694-4a Feb-02-2018	Feb-02-2018	Feb-02-2018 (AMB) Upper Deck Alley Aft	AMB	e E	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	≥	٧	
34694-5a	Feb-02-2018		Feb-02-2018 (AMB) Upper Deck Alley FWD	AMB	Qſ	5.12	11:42	14:47	185	3.0	100	947.2	3.82	<0.01	≥	٧	
34694-6a	Feb-02-2018		Feb-02-2018 (AMB) Upper Deck Oilers Aft Cabin	AMB	Qſ	2.04	11:22	14:01	159	2.0	100	324.36	2,55	<0.01	≥	٧	
34694-7a	Feb-02-2018		Feb-02-2018 (AMB) Upper Deck Winchman's Cabin	AMB	Of	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	≥	٧	
34694-8a	Feb-02-2018		Feb-02-2018 (AMB) Poop Deck Alley	AMB	Of.	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	≥	·	
34694-9a	Feb-02-2018	Feb-02-2018	34694-9a Feb-02-2018 Feb-02-2018 Logistic Officer's Cabin	AMB	Qſ	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	>	٧	
34694-10a	Feb-02-2018	Feb-02-2018	34694-10a Feb-02-2018 Feb-02-2018 Lounge	AMB	OC	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	≥	~	
34694-11a	34694-11a Feb-02-2018	Feb-02-2018	Feb-02-2018 (AMB) Boat Deck Alley	AMB	OC OC	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	≥	·	
34694-12a	Feb-02-2018	Feb-02-2018	34694-12a Feb-02-2018 Feb-02-2018 Chief Officer's Cabin	AMB	JD QC	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	>	~	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

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Area Type* Analyst Avg. Flow Rate
(QC) Field Blank QC JD
(AC) Poop Deck AC JD Lounge
(AMB) Boat Deck Chief Officer AMB JD (Location 1)
(AMB) Boat Deck AMB JD Alley (Location 2)
(AMB) Poop Deck Lounge (Location 3)
(AMB) P. Deck Logistics Officer AMB JD Cabin (Location 4)
(AMB) Poop Deck Alley (Location 5)
(AMB) Upper Deck Winchman's Cabin AMB JD (Location 6)
(AMB) Upper Deck Oilers Aft Cabin AMB JD (Location 7)
(AMB) Upper Deck Alleyway Aft (Location 8)
(AMB) Upper Deck Alley FWD (Location AMB)D 9)
(AMB) Above Tank Top Control Room AMB JD (Location 10)
(QC) Field Blank QC JD
(QC) Field Blank QC JD

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

*Legend and Explanation of Terms

CR - dean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably actievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air dearance limit (for blanks, indicates possible media contamination)



As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

LAB# 202314



201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865

rax: (25U) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Bulk Sample Report

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett Wheelhouse Wire Testing 2018-01-22

Date: January 24, 2018

Client Job or PO#: NEED Project number: 34596

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-1b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	Oť	Wire (Green)	Wire Wrap - Green	8	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-1b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	OC	Wire (Green)	Wire Insulation - Black	99	None Detected	0	Non-Fibrous	100	
34596-2b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	Oť	Wire (Dark Grey)	Wire Wrap - Black	\$	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-2b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	JD	Wire (Dark Grey)	Wire Insulation - Black	09	None Detected	0	Non-Fibrous	100	
34596-3b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	ОС	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-3b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	Qť	Wire (Black)	Wire Insulation - White	09	Chrysotile	70	Synthetic	30	
34596-4b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	σc	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-4b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	Ωſ	Wire (Black)	Wire Insulation - White	99	Chrysotile	70	Synthetic	98	
34596-5b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	ЭD	Wire (Dark Grey)	Wire Wrap - Dark Grey	8	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-5b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	σc	Wire (Dark Grey)	Wire Insulation - Black	99	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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LAB# 202314

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Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
34596-6b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	Qf	Wire (Dark Grey)	Wire Wrap - Red 40 None Detected	4	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-6b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	ЭD	Wire (Dark Grey)	Wire Insulation - Black	09	60 None Detected	0	0 Non-Fibrous	100	
34596-7b Layer 1	Stbd Bridge Wing Console	Jan-24-2018	ЭD	Wire (White)	Wire Wrap - White	40	40 None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-7b Layer 2	Stbd Bridge Wing Console	Jan-24-2018	JD	Wire (White)	Wire Insulation - Black	09	60 None Detected	0	0 Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust

Wipe

CCGS Bartlett Laundry Room Insp And Project:

Clearances

Project No.: 34659

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6435039 Client No.: 34659-1b

Client: NOR765

Location: Laundry Behind Washer

Area (cm2): 100

Density (s/mm²): 61.5

Concentration (s/cm²): 14800

Asbestos Type(s): Chrysotile Amosite

Lab No.:6435040 Client No.: 34659-2b Location: (QC) Process Blank

Area (cm²): Blank

Density (s/mm^2) : <7.69

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Lab No.:6435041 Client No.: 34659-3b Location: (QC) Batch Blank

Area (cm2): Blank Density (s/mm²): <7.69 Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature: Analyst:

Dated: 1/31/2018 2:54:39

Approved By:

Page 1 of 3

Frank E. Ehrenfeld, III

Laboratory Director

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CERTIFICATE OF ANALYSIS

North West Environmental Group Ltd. Client:

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability, iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

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Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 1/31/2018 2:54:39



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

Client: NOR765

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18) Note: *Results are for informational purposes only. Samples received on 0.8 um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date:

Report No.:

1/31/2018 556407 - TEM Dust

Wipe

Project:

CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435039 Client No.: 34659-1b

Volume Filtered (mL):2 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²): 1850

Micrograph Number:

EDXA Spectrum ID: 12:42:33PM

Lab No.: 6435040 Client No.: 34659-2b

Volume Filtered (mL):7 Dilution Factor (mL):50 Grid Openings: 10 Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²): NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Laundry Behind Washer

Asbestos Structures: 8

Structures < 5 Microns: 7 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 61.5

Structure Concentration (s/cm²): 14800

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm²): Blank Location: (QC) Process Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures \geq 5 μ m: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45 Non-Asbestos Structures: 1

Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): 1850

Non-Asbestos Type(s): SiAl - Other Fiber

Filter Type: MCE Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature: Analyst:

Dated: 1/31/2018 2:54:39

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

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Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust

Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435041

Client No.: 34659-3b

Volume Filtered (mL): 7 Dilution Factor (mL): 50 Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): Blank Location: (QC) Batch Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature: Analyst:

Dated: 1/31/2018 2:54:39

Approved By:

Page 2 of 3

Frank E. Ehrenfeld, III

Laboratory Director



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

Dated: 1/31/2018 2:54:39



Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 01, 2018

Client Job or PO#: NEED Project number: 34694

Sample No	Location	Date Analy Analysed	Analyst	Description	Phase %	%	Asbestos	%	% Other Materials %	%	Comments
34694-1b	4694-1b MCR Stores	Feb-01-2018 JD	Oľ	Rope Gasket (~1.5cm) White / Grey		100	100 Chrysotile	30	Synthetic (50%) Non-Fibrous (20%)	70	
34694-2b	Engine Room	Feb-01-2018	BR	Wiring - Black, ~1cm White / Black		100	100 Chrysotile	30	Cellulose (30%) Synthetic (10%) Non-Fibrous (30%)	70	



LAB# 202314

1/1



201 – 415 Gorge Road East Victoria BC V8T 2W1

> Tel: 250-384-9695 Fax: 250-384-9865

e-mail: jtaptuna@nwest.bc.ca

File No. 34694 P1 V1.0

Via Email

1 February 2018

Matt Jackson Canadian Coast Guard 20 Huron Street Victoria, BC, V8V 4V9

Attention: Matt Jackson, Chief Engineer

Re: Proposal for Background Asbestos Testing on the CCGS BARTLETT

North West Environmental Group Ltd. (NWest) is pleased to present a proposal for background testing throughout the vessel to look for evidence of the spread of asbestos contamination. The Bartlett is alongside at 20 Huron Street in Victoria, BC. NWest will undertake surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether fibres have been rendered airborne during normal ship use while alongside.

Scope of Work

The ambient air sampling and surface wipe sampling plan is summarized in the following table. Note that sample quantities are approximate as site conditions may require additional sample collection.

DECK	LOCATION	AMBIENT AIR SAMPLING	SURFACE WIPE SAMPLING
Above Tank Top	Engine Room	0	4
	Control Room	1	2
Upper Deck	Alleyway	2	0
	Bosun's Cabin	1.00	0
	Crew Cabin	1	0
Poop Deck	Alleyway	1	0
	2 nd Officer's Cabin	1	0
	Lounge	1	
	Return Air Vent	0	1
Boat Deck	Alleyway	1	0
	Chief Officer's Cabin	1	0
	Estimated totals	10 + 2 field blanks	7 + 2 field blanks

Estimate

NWest will complete the above noted scope of work on a Time and Materials basis, estimated to be \$7712, taxes not included. Site work will be conducted during a work week day, during regular hours (8 am- 5 pm). Costs for work conducted on overtime, weekend and or statutory holidays is not included. A breakdown of budget estimate is as follows.



s.19(1) s.20(1)(b)

s.20(1)(c)

Background Asbestos Testing CCGS BARTLETT

NWest Project No. 34694 February 1, 2018

ITEM	TASK	UNITS (ESTIMATE)	RATE	EXTENTION
1	Project Manager: project design, coordination, travel, site work.	24 hours	per hour	
2	Project Manager: reporting	8 hours	per hour	
3	Senior Project Manager: review, consultation	4 hours	per hour	
4	Principal in Charge: review, consultation	3 hours	\$ per hour	
5a	Sample Analysis: Ambient Air	12 samples	each	
5b	Sample Analysis: Ambient Air (additional samples, if required due to site conditions)	TBD	each	TBD
6	Sample Analysis: Surface Wipe	9 samples	each	
7	Disbursements (mileage, courier, communication)	1		
	ESTIMATED	TOTAL, taxes ext	:ra	\$7712

Limitations

The following limitations apply:

- 1. NWest requires safe access to compartments.
- 2. NWest requires access to electrical outlets to run air monitoring pumps.
- 3. NWest is not responsible for costs incurred due to delays in shipping, travel, or delivery of analytical results from laboratories. Additional costs are the responsibility of the client.
- 4. Mileage fees are waived.
- 5. Work is Monday to Friday between 8 am and 5 pm. Overtime excluded.
- 6. These types of testing may not be able to determine the source of asbestos contamination, but rather, will be able to determine whether contamination exists.

NOTE: Sampling pumps are noisy. NWest will coordinate with CCG to determine the least intrusive locations to sample in, while maintaining the integrity of the sampling plan.

NWest carries \$5 million Liability, \$5 million Pollution Liability and \$5 million Errors and Omissions Insurance.

Our WorkSafeBC number is 436736.

We hope this information is helpful to you and we look forward to working with you.

Yours truly,

Project Manager





Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865

Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett Laundry Room Insp and Clearances

Date: January 30, 2018

Client Job or PO#: NEED Project number: 34659

Volume Density Concen. v/vv LOQ Comment (L) (fib/mm2) (fib/mL)				
ბ01	>	>		
v/vv	٨	^		
Concen. (fib/mL)	2.55 <0.01 VV	<0.01 VV	<0.01	<0.01
Density (fib/mm2)	2.55	6.37	00.0	00.0
Volume (L)	2781	2781	0	0
# Fields	100	100	100	100
Time Time Time # # On Off (Mins) Fibres Fields	2.0	5.0	0.0	0.0
Time (Mins)	180	180	0	0
Time Off	11:35	11:35	00:00	00:00
Time On	15.45 08:35 11:35 180	15.45 08:35 11:35 180	00:00 00:00	0 00:00 00:00 0
Avg. Flow Rate (Ipm)	15,45	15.45	0	0
Type* Analyst Avg. Flow Rate (Ipm)	JD	Дſ	JD	Oſ
Type*	AC	AC	nk QC	эò
Area	(AC1) Sink	34659-2a Jan-30-2018 Jan-30-2018 (AC2) Entrance	34659-3a Jan-30-2018 Jan-30-2018 (QC) Process Blank	34659-4a Jan-30-2018 Jan-30-2018 (QC) Batch Blank
Date Analysed	34659-1a Jan-30-2018 Jan-30-2018 (AC1) Sink	Jan-30-2018	Jan-30-2018	Jan-30-2018
Date Collected	Jan-30-2018	Jan-30-2018	Jan-30-2018	Jan-30-2018
Sample No	34659-1a	34659-2a	34659-3a	34659-4a

PAT PROGRAMS AIHA PROFICENCY ANALYTICAL TESTING PROGRAMS

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

LAB# 202314

1/2

99/000

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker) AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)



As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

LAB# 202314

Prepared for: Canadian Coast Guard Services

CCGS BARTLETT

Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments **Limited Hazardous Materials**

Project: 34699 RA1 V1.0

Issue date: February 2, 2018



North West
Fivenmental Group Ltd.

201 - 415 Gorge Road East

Victoria, BC

V8T 2W1

Limited Hazardous Materials Risk Assessment & Safe Work Procedures partments FOR REVIEW CCGS BARTLETT
2018 Dust Cleanup: Various Compartments

February 2, 2018

Background and Scope of Work	ground and S Wheelhouse Laundry Rooi Void Space L MCR Console MCR Stores. Additional Re o Plate
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Background and Scope of Work

(LHMA) in accordance with WorkSafeBC regulatory requirements outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 – Hazardous North West Environmental Group Ltd. (NWest) was retained by the Canadian Coast Guard (CCG, the Client) to conduct a limited hazardous materials assessment Materials. The LHMA was conducted by NWest representative Jen Taptuna on January 26, 2018.

Room in all accessible areas, excluding behind the washers and dryers due to inaccessibility at the time. As assessment of the dust in these two areas identified the Various areas were found to have asbestos-containing cables. The presence of these cables triggered an assessment of latent dust in Wheelhouse console casings. Concurrently, damage to an asbestos-containing bulkhead panel was identified by CCG crew in the Laundry Room. An abatement contractor cleaned the Laundry presence of asbestos fibres in excess of expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories

The scope of work was provided as follows in the request for quote with additional details provided to the attending technician at the time of this assessment.

efforts behind the washers and dryers. Asbestos in latent dust in the Wheelhouse consoles fell in the high range (>100,000 s/cm²). It is suspected that the asbestos is Asbestos in latent dust in the Laundry room fell in the moderate range (>10,000 to 100,000 structures per square centimetre (s/cm²), warranting additional cleaning a result of pulling asbestos-containing cabling throughout the years.

Note that there is no accepted, standardized method of determining the mobility of asbestos fibres from latent dust into the air. The rate of mobility is dependent on various factors. The main factor for mobility on the vessel is vibration and movement during normal at-sea operations, therefore, it has been deemed prudent to remove all loosely adhered and safe to access dust from these areas.

Bulk sampling was undertaken of stored gasket materials in the Machinery Control Room Stores (MCR Stores). Chrysotile asbestos was identified in rope gasket/packing materials. These materials have been stored exposed in the MCR Stores for an unknown length of time. The following document presents a risk assessment and provides safe work procedures for removing asbestos-containing dust from the following locations:

- Wheelhouse and consoles.
- Laundry Room, specifically behind the washers and dryers.
 - Void space beneath the Wheelhouse m
- MCR console.
- MCR stores. 4. 3.

Risk assessments and general procedures are based on our understanding of the scope of work and the methods and means intended to be used by the Abatement Contractor. Should the work activity type differ from what is noted herein, a new risk assessment may be required for that activity,



Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

February 2, 2018

1.1 Wheelhouse and Consoles

Scope of Work

- Remove loosely adhered dust from all surfaces within all consoles.
- Clean all surfaces in the Wheelhouse.
- Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- 1. Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at all Wheelhouse entrances. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- HEPA vacuum and bag curtains and other removable porous materials that will be reused. These items will be laundered prior to reuse.
- 6-mil poly drop sheet around console access to prevent entrainment of dust into the carpet.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within consoles. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum and wipe all surfaces within the Wheelhouse to remove loosely adhered latent dust. Binders/books: only HEPA vacuum the outer surfaces. CAUTION: take care not to change any settings on the control panels.
- HEPA vacuum the carpet using a carpet head attachment.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



34699 RA1 V0.C - CCGS Bartlett Dust Abatement

February 2, 2018

.2 Laundry Room

Scope of Work

- Remove loosely adhered dust from all surfaces behind the washers and dryers.
- Clean all surfaces in the Laundry Room.
- Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed.

Contractor Requirements

Remove loosely adhered dust from behind washers and dryers and clean all Laundry Room surfaces

- .. Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the Laundry Room entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- A pop-up or small enclosure may be constructed in the Alleyway outside the Laundry Room to create more work space. If used, it must not impede worker access through the Alleyway. Coordinate with CCG crew.
- Dismount the washers and dryers to access the space behind them.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces on the back sides of the units and the bulkhead and deck behind. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- NWest will conduct an inspection at this time, prior to re-installation of the units.
- Upon successful inspection, reinstall units.
- HEPA vacuum exposed surfaces of the Laundry Room (i.e. do not open millwork to clean surfaces inside as these were cleaned previously).
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake a final inspection and air clearance sampling.



February 2, 2018

Void Space Under Wheelhouse

Scope of Work

- Remove loosely adhered dust from all surfaces.
- Remove all dust and debris from deck.
- Hazards: Asbestos-containing dust. Vitreous fibres from exposed Fibreglass-type insulation. Red primer assumed to contain lead. Enclosed space with a single entrance/exit.

Contractor Requirements

Remove loosely adhered dust from all surfaces.

- .. Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance to the void space. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- access/egress of the space. The intent is to pull makeup air into all areas of the space, therefore, the extraction duct or NAU should be placed as far Install a certified negative air unit (NAU) to draw air out of the space. Place it in such a manner as it does not impede regular or emergency from the entrance as practicable to avoid short circuiting.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces in the space. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- Work should start from the entrance and move into the space to reduce the amount of contamination that accumulates on worker's coveralls.
- Note: additional effort may be required to remove all dust from high contact surfaces such as the deck (i.e. remove all dust, not just loosely adhered material).
 - Due to the small volume of the work area and anticipated increased concentration of fibres rendered airborne during cleaning activities, workers must utilize powered air purifying respirators (PAPRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



34699 RA1 Vo.C - CCGS Bartlett Dust Abatement

February 2, 2018

1.4 MCR Console

Scope of Work

- Remove loosely adhered dust from all surfaces within the console.
- Remove loosely adhered dust from the deck behind the console and from cables running out of the console, up to the first cable tray bracket.
- equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage. Engines or other equipment Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Fragile and sensitive equipment present. Some electrical cabling and may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- . Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- 6-mil poly drop sheet around console access.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within and behind console. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum the deck around console openings.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.5 MCR Stores

Scope of Work

- Remove box containing asbestos rope gaskets/packing. Remove any visually similar materials, after confirming with CCG these additional materials can be disposed.
- Clean the shelving unit and adjacent surfaces within three feet.



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Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

February 2, 2018

Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- 5. Moderate risk cleanup activities
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Remove identified bulk materials and place in 6 mil poly bags. Dispose as asbestos waste.
- Remove from the shelving unit each piece of equipment or material to be kept. HEPA vacuum all exterior surfaces and place in the MCR.
- When all items are removed from the shelving unit, HEPA vacuum and damp wipe the shelving unit.
- HEPA vacuum and damp wipe all surfaces behind and adjacent to the shelving unit.
- NWest will undertake an inspection for cleanliness at this time.
- Upon successful inspection, items can be replaced.
- HEPA vacuum the deck.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.6 Additional Requirements

- If suspect materials are discovered during abatement activities that have not been included in this risk assessment, work must stop and the material assessed by a qualified person.
- Submit Notice of Project complete with site specific work procedures to WorkSafeBC no less than 48 hours prior to commencing work
- All HEPA vacuums and NAUs must be certified (DOP/PAO tested) within 12 months of use. Recommend on-site certification to ensure units are functioning properly after transport.



Limited Hazardous Materials Risk Assessment & Safe Work Procedures partments FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

February 2, 2018

- Provide occupational health and safety program including exposure control plans for asbestos, lead, vitreous fibres, and silica as well as procedures for deenergization and lockout if required.
- Provide all first aid for contractor workers.
- alternative respirator cartridges (e.g. nearby welding, chemical applications, or vehicle exhaust). For the purposes of handling the above identified hazardous Other personal protective equipment (PPE) such as safety eyewear, hard hats, or face protection may be required. Site conditions may necessitate the use of materials, all cartridges must utilize P-100 particulate filters, at minimum.
- No wet wiping, wire brushing, or application of liquids to electrical cabling.
- Contractor shall coordinate schedule around the crew's schedule including fueling events, maintenance, practice drills and any other reasonably foreseeable activity. Contractor is responsible for coordination with Chief Engineer and Chief Steward.
- All air sampling to be conducted by NWest.



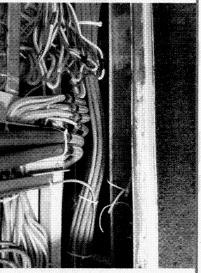
Limited Hazardous Materials Risk Assessment & Safe Work Procedures **FOR REVIEW** 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

February 2, 2018

Photo Plate



Unit/Location: Wheelhouse
Description: Overview
Comments: Curtains and other porous items
meant for reuse will be HEPA vacuumed, bagged,
and laundered. HEPA vacuum and wipe all
surfaces.



Unit/Location: Wheelhouse console Description: Overview of typical console Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust. Do not wet/damp wipe cables.



Unit/Location: Laundry Room Description: Overview Comments: Units are framed into place.



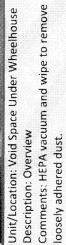
Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

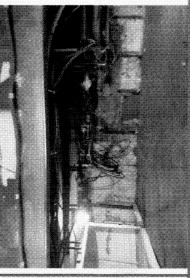
February 2, 2018



Unit/Location: Laundry Room
Description: Dust behind washers and dryers to be cleaned.
Comments: Remove units and clean backsides of

units and the bulkhead and deck





Unit/Location: Void Space Under Wheelhouse Description: Overview Comments: HEPA vacuum and wipe to remove loosely adhered dust. Fibreglass-type insulation present.



Unit/Location: MCR
Description: Overview
Comments: HEPA vacuum accessible surfaces
within consoles to remove loosely adhered dust.
Do not wet/damp wipe cables.



Unit/Location: MCR Stores
Description: Asbestos-containing rope
gaskets/packing stored exposed.
Comments: Dispose of ACM, clean shelving and adjacent surfaces within 2 feet.



Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust.

Description: Overview

Unit/Location: MCR

Do not wet/damp wipe cables.

34699 RA1 V0.C - CCGS Bartlett Dust Abatement

2018 Dust Cleanup: Various Compartments CCGS BARTLETT

Limited Hazardous Materials Risk Assessment & Safe Work Procedures partments FOR REVIEW

February 2, 2018

Validation

occupational hygiene professionals operating in this jurisdiction. No assessment was requested or made of other potential areas of asbestos or lead contamination All work undertaken was conducted according to standardized methods and otherwise in accordance with protocols and procedures currently utilized by that may or may not be present within the vessel.

Project Manager Report author

Signature on file

Qualified Person as per OHS Reg 6.1 Senior Project Manager Report review



Information Adv. Do.

CCGS BARTLETT Limited Hazardous Materials Risk Assessment & Safe Work Procedures 2018 Dust Cleanup: Various Compartments FOR REVIEW

Appendix A. Analytical Reports

February 2, 2018

North West Morth Coup Ltd.

34699 RA1 V0.C - CCGS Bartlett Dust Abatement

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: 1/31/2018

201 - 415 Gorge Road East

Report No.: 556406 - TEM Dust Rev #5, 1/31/2018

Victoria BC V8T 2W1

Project:

CCGS Bartlett Wheelhouse Console Asbestos

Testing

Client: NOR765

Project No.: 34651

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6435034

Location: WH Fire Panel Console FWD

Concentration (s/cm²): 6040000

Client No.: 34651-6b

Area (cm²): 100 Density (s/mm²): 1260 Asbestos Type(s): Chrysotile Amosite Anthophyllite

Lab No.:6435035 Client No.: 34651-7b Location: WH Fire Panel Console AFT

Concentration (s/cm²): 9990000

Area (cm2): 100

Density (s/mm²): 1040

Asbestos Type(s): Chrysotile Amosite

Lab No.:6435036 Client No.: 34651-8b Location: WH FWD Stbd Console

Concentration (s/cm²): 370000 Asbestos Type(s): Chrysotile

Area (cm2): 100

Density (s/mm²): 76.9

Lab No.:6435037 Client No.: 34651-9b Location: WH Batch Blank

Concentration (s/cm²): NA

Area (cm²): Blank Density (s/mm²): <7.69 Asbestos Type(s): None Detected

Lab No.:6435038 Client No.: 34651-10b Location: WH Process Blank

Area (cm²): Blank

Density (s/mm²): 7.69

Concentration (s/cm²): NA Asbestos Type(s): Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Signature: Analyst:

Dated: 1/31/2018 5:48:16

Page 1 of 3

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust Wipe

CCGS Bartlett Wheelhouse Console Project:

Asbestos Testing

Project No.: 34651

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and it our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763

Dated: 1/31/2018 5:48:16



> 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

1/31/2018 Report Date:

Report No.: 556406 - TEM Dust Wipe

Project: CCGS Bartlett Wheelhouse Console

Asbestos Testing

Project No.: 34651

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

_

Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Project:

Report No.: 55640

556406 - TEM Dust

Rev #5, 1/31/2018

Wipe

CCGS Bartlett Wheelhouse Console Asbestos

Testing

Project No.: 34651

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435034 Client No.:34651-6b

Shell 140...54051-00

Volume Filtered (mL):0.1
Dilution Factor (mL):50
Crid Openings:3

Grid Openings:3

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0390 Sensitivity (s/mm²):25.6

Detection Limit (s/cm²): 123000

Micrograph Number: EDXA Spectrum ID:

Lab No.:6435035 Client No.:34651-7b

Volume Filtered (mL): 0.05
Dilution Factor (mL): 50

Grid Openings: 2

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0260 Sensitivity (s/mm²): 38.5

Detection Limit (s/cm²): 370000

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: WH Fire Panel Console FWD

Asbestos Structures: 49

Structures < 5 Microns: 44 Structures $\ge 5 \mu m$: 5

Structure Density (s/mm²): 1260

Structure Concentration (s/cm²): 6040000

Asbestos Type(s):

Chrysotile Amosite

Anthophyllite

Area Sampled (cm²): 100

Looption: WH Fire Panel Console Al

Location: WH Fire Panel Console AFT

Asbestos Structures: 27

Structures < 5 Microns: 22 Structures $\ge 5 \mu m$: 5

Structure Density (s/mm²): 1040

Structure Concentration (s/cm²): 9990000

Asbestos Type(s):

Chrysotile Amosite Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <25.6

Structure Concentration (s/cm²):<123000

Non-Asbestos Type(s):

None Detected

Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<38.5

Structure Concentration (s/cm²): <370000

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

Date Analyzed:

1/31/2018 01/31/2018

Signature:

Analyst:

Dated: 1/31/2018 5:48:16

Approved By:

Frank Tuenful

Frank E. Ehrenfeld, III Laboratory Director

Page 1 of 4



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date:

Project:

1/31/2018

Report No.:

556406 - TEM Dust

Rev #5, 1/31/2018

Wipe

CCGS Bartlett Wheelhouse Console Asbestos

Testing

Project No.: 34651

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435036

Client No.: 34651-8b

Volume Filtered (mL):0.1 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013

Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):92500

Area Sampled (cm2): 100

Location: WH FWD Stbd Console

Asbestos Structures: 4

Structures < 5 Microns: 2

Structures $\geq 5 \mu m$: 2

Structure Density (s/mm²): 76.9

Structure Concentration (s/cm²): 370000

Asbestos Type(s): Chrysotile

Filter Type:MCE

Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²):<92500

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6435037 Client No.: 34651-9b

Volume Filtered (mL):7 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2):Blank Location: WH Batch Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the	Preface of th	is report for	further	information	regarding y	your analy	ysis

Date Received:

Date Analyzed:

1/31/2018

01/31/2018

Signature: Analyst:

Dated: 1/31/2018 5:48:16

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Project:

Report No.: 556406 - TEM Dust

Rev #5, 1/31/2018

CCGS Bartlett Wheelhouse Console Asbestos

Testing

Project No.: 34651

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435038 Client No.: 34651-10b

Volume Filtered (mL):7 Dilution Factor (mL):50 **Grid Openings: 10** Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²): NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): Blank Location: WH Process Blank

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures \geq 5 μ m: None Detected Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s):

Amosite

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature: Analyst:

Dated: 1/31/2018 5:48:16

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust Wipe

Project: CCGS Bartlett Wheelhouse Console

Asbestos Testing

Project No.: 34651

Dated: 1/31/2018 5:48:17

Sheppard, Frederick

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

February 25, 2018 6:20 PM

To:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room

Subject:

FW: Bartlett Air Results - Feb 3

Attachments:

34694 AA3 V1.0 2018-02-03 - CCGS Bartlett Background Testing S#1-35.pdf

FYI. Limit of detection (LOD) vs limit of quantitation (LOQ) is interesting, (and confusing).

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: February-04-18 7:08 AM

To: CCGS-NGCC, Bartlett Captain; McMillan Cody; Chaikin Gabriel

Subject: FW: Bartlett Air Results - Feb 3

Results from yesterday's air tests.

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From:

Sent: February-03-18 10:51 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject: Bartlett Air Results - Feb 3

Hi Matt, additional air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected as per my earlier email and have been analyzed. As before all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

We can chat more tomorrow.

Best,



Project Manager North West Environmental Group Ltd.

P. 250-384-9695 ext. F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC , V8T 2W1

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No information has been removed or severed from this page

N.N. North West 2 Environmental Group Ltd.

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 03, 2018

Client Job or PO#: NEED

Project number: 34694

Sample No	Date Collected	Date Analysed	Area	Туре*	Analyst	Avg. Flow Rate (Ipm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	^/ ^	7 00	Comment
34694-3a	Feb-02-2018		Ε	AMB	ar	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	8	v	
34694-4a	34694-4a Feb-02-2018	Feb-02-2018	Feb-02-2018 (AMB) Upper Deck Alley Aft	AMB	Оť	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	3	~	i
34694-5a	Feb-02-2018	Feb-02-2018	34694-5a Feb-02-2018 Feb-02-2018 (AMB) Upper Deck	AMB	Of.	5.12	11:42	14:47	185	3.0	100	947.2	3,82	<0.01	Λ	v	
34694-6a	Feb-02-2018	Feb-02-2018		AMB	JD	2.04	11:22	14:01	159	2.0	100	324.36	2.55	<0.01	Μ	V	
34694-7a	Feb-02-2018	Feb-02-2018		AMB	OC	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	>	v	
34694-8a	Feb-02-2018	Feb-02-2018	Feb-02-2018 (AMB) Poop Deck Alley	AMB	OC	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	٨	v	
34694-9a	Feb-02-2018	Feb-02-2018		AMB	OC	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	^	٧	
34694-10a	Feb-02-2018	Feb-02-2018	34694-10a Feb-02-2018 Feb-02-2018 Lounge	AMB	ar	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	8	~	
34694-11a	Feb-02-2018	Feb-02-2018	Feb-02-2018 Feb-02-2018 AMB) Boat Deck	AMB	Qſ	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	^	v	i
34694-12a	Feb-02-2018	Feb-02-2018	34694-12a Feb-02-2018 Feb-02-2018 Chief Officer's Cabin	AMB	OC	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	>	~	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

1/3

Comment														,
							:							
007		\ \	٧	v	~	٧	v	· ·	٧	٧	v	V		
v/vv		>	>	≥	>	>	>	>	>	≥	≩	>		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	0.00	8.28	5.73	5.10	5.73	7.01	9.55	7.64	19.11	2.55	2.55	8.92	2.55	1.27
Volume (L)	0	2006.88	1521.52	1493.52	1498.6	1496.06	1493.52	1483.36	1470.66	1483.36	1483.36	1469.16	0	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	0.0	6.5	4.5	4.0	4.5	5.5	7.5	6.0	15.0	2.0	2.0	7.0	2.0	1.0
Time (Mins)	0	148	616	588	069	589	588	584	579	584	584	583	0	0
Time Off	00:00	16:55	18:42	17:43	17:40	17:55	17:45	18:00	17:51	17:49	17:45	18:04	00:00	00:00
Time On	00:00	14:27	08:26	07:55	02:20	90:80	07:57	08:16	08:12	08:05	08:01	08:21	00:00	00:00
Avg. Flow Rate (Ipm)	0	13.56	2.47	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.52	0	0
Analyst	JD	e.	σc	Oť	JD	Q	Οί	OC	Q.	Q.	סנ	OC	JD	OC
Туре*	ებ	AC	AMB	AMB	AMB	АМВ	AMB	АМВ	АМВ	АМВ	АМВ	АМВ	óс	ე ბ
Area	(QC) Field Blank	(AC) Poop Deck Lounge	(AMB) Boat Deck Chief Officer (Location 1)	(AMB) Boat Deck Alley (Location 2)	(AMB) Poop Deck Lounge (Location 3)	(AMB) P. Deck Logistics Officer Cabin (Location 4)	(AMB) Poop Deck Alley (Location 5)	(AMB) Upper Deck Winchman's Cabin (Location 6)	(AMB) Upper Deck Oilers Aft Cabin (Location 7)	(AMB) Upper Deck Alleyway Aft (Location 8)	(AMB) Upper Deck Alley FWD (Location 9)	(AMB) Above Tank Top Control Room (Location 10)	Feb-03-2018 (QC) Field Blank	(QC) Field Blank
Date Analysed	Feb-02-2018	Feb-02-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018		Feb-03-2018
Date Collected	Feb-02-2018	34694-23a Feb-02-2018	34694-24a Feb-03-2018	Feb-03-2018	Feb-03-2018	34694-27a Feb-03-2018	Feb-03-2018	34694-29a Feb-03-2018	34694-30a Feb-03-2018	Feb-03-2018	34694-32a Feb-03-2018	34694-33a Feb-03-2018	34694-34a Feb-03-2018	34694-35a Feb-03-2018
Sample No	34694-13a	34694-23a	34694-24a	34694-25a	34694-26a	34694-27a	34694-28a	34694-29a	34694-30a	34694-31a	34694-32a	34694-33a	34694-34a	34694-35a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



2/3

LAB# 202314

000791

*Legend and Explanation of Terms

CR - dean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB – ambient; sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air dearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably actievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

PAT PROGRAMS
AINA PROFICIENCY ANALYTICAL TESTING PROGRAMS

3/3

LAB# 202314

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

March-01-18 12:44 PM

To:

CCGS-NGCC, Bartlett Logistics Officer

Cc:

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC,

Bartlett Chief Officer

Subject:

Re: Recent ACM IIR History

Attachments:

Wheelhouse Console Dust Sampling.pdf; Wheelhouse Console ACM - Wiring

Insulation.pdf; Laundry Room Bulkead.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.5 01.03.2018.pdf

Importance:

High

Cam,

Here's my list of recent ACM IIRs (Asbestos Containing Materials). I do not have any record of them being sent ashore.

- 1. Wheelhouse Console Dust Sampling 2018-01-12
- 2. Wheelhouse Console ACM Wiring Insulation 2018-01-28
- 3. Laundry Room Bulkhead 2018-01-28
- 4. IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018. But please note that this was a WC IIR signed by Captain McCullagh, and that I have revised wording as document:......
- 4b. IIR Eng.Room ACM Debris and Lead Paint Ver.5 09.01.2018 And Captain M.Shuckburgh may or may not need to or want to sign this depending on whether it has been submitted ashore.

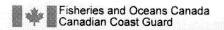
Thanks,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



9.B.1 NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence. A. Type of Incident (Required) (Choose only one) Disabling Injury (visit to medical professional, time lost) Loss of Consciousness due to electric shock or toxic atmosphere ☐ First Aid ☐ Near Miss Minor Injury (visit to medical professional, no time lost) ☐ Pollution Activation of an Emergency Procedure Property Damage Fire or Explosion (Shore only) □ Unsatisfactory Condition Other (specify) B. General Information (Required) Employer's (Department) Name Site/Vessel Name (and official number) Canadian Coast Guard **CCGS Bartlett** Date of Report (YYYY-MM-DD) 2018-01-28 25 Huron Street Victoria BC V8V 4V9 Mailing Address Supervisor's Telephone # 250-882-1273 Name of Responsible Supervisor Matthew Jackson Organization (Select One) ☐ National HQ Coast Guard College Region (if selected, choose Directorate and Program/Branch below) Regional Directorate (Select One) ☐ AC's Office 区 Fleet □ ITS ☐ IBMS Incident Management Navigational Programs Program/Branch (Select One) ☐ AtoN MarSup Refit and Maintenance ☐ Canso ☐ MCI ☐ ROC □ cgss □ MCTS ☐ SAR □ E&I **□** ME ☐ Science ☐ EFM (C&P) MNS ∇essels of Concern ☐ ER MSET ☐ Other □ Ice Ops Business ☐ ILS C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed. Surname Given Name Initial(s) Age Gender Job Title Years of experience in current Female Male position **Employment Status** ☐Indeterminate Term Casual/Relief Program Client Student ☐ Contractor Other (Specify)

INCIDENT INVESTIGATION REPORT (IIR)



Fisheries and Oceans Canadian Coast Guard	da
-------------------------------------------	----

D. Incident Information (Required)								
Did this involve a motor vehicle* accident?		s, please ensure the pleted.	Motor Vehicle Accide	ent (MVA) Report is				
Did this involve Helicopter Operations?	Yes ☐ No ⊠ Did ti	his incident involve S	mall Craft Operations	? Yes 🗌 No 🖂				
Location of Incident (include geographical	name of body of wate	er, waterway, harbour	, latitude, longitude if	applicable)				
Alongside Victoria Coast Guard Base Refit	Period							
Date of Incident (YYYY-MM-DD) 2018-01-2	4	Time of Incident (Lo	cal) 1600					
Body part injured (if applicable)								
☐ Abdomen ☐ Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin				
☐ Arm ☐ Body System / Into	ernal 🔲 Foot	☐ Head	☐ Leg	Shoulder				
Auditory Chest	☐ Hand	☐ Hip		Unknown				
Nature of injury (if known)								
Burns		☐ Multiple Injuries						
☐ Fractures		☐ Traumatic joint/lig	gament and muscle/t	endon injury				
☐ Injury to Nerves and Spinal Cord		☐ Wounds, Lacerat	ions and Amputation	s				
☐ Intracranial Injury		Unknown						
E. Investigation Information (Required)								
Type of Event								
Caught in or between	Exposure to a trai	umatic event	Slips, trips and f	alls				
Contact with harmful substance		ment Failure	Struck by or aga	ninst				
Exposure to Electricity Mechanism of harm unknown Vehicle incident								
☐ Exposure to Fire	Overexertion		Other (specify)					
Exposure to heat/cold	Repetitive Motion							
Exposure to noise								
Description of Incident - Sequence of Even parts relevant to the investigation or photos		sheets, chart(let)s, dia	grams, location of ar	ny failed or damaged				
January 22, 2018 - Electrical wire and insul Starboard Control Console to be tested for January 24, 2018 - Asbestos test results re Asbestos (70%). The insulation tested pos Recommendation from Northwest Environment be asbestos containing until samples were January 26, 2018 - Northwest Environment insulation test results with the Project Manais a good indication the dust may not contain the greatest concern in the shedding asbesshows wire wrap in good overall condition. hour turnaround) requested on test results. See attached photo of the wiring taken duritop wires in the bottom terminal strip are the Was a Risk Assessment performed prior to Specify	asbestos. ceived, two of the ser itive while the wire wi nental was to restrict tested. cal returned to take du ager from Northwest E in asbestos, as chaffi stos fibers. Visual ins Samples couriered to Results expected Ja ng dust sampling. No e wires which test res	ven samples wire samples (jacket) tested ne access to location and lest samples from the Environmental, the ne ng wire wraps which pection of asbestos-co a laboratory in New anuary 30, 2018. The black wires no sult show contain asbestos and samples wire wire samples wire wire wire wire wire wire wire wire	nples returned positive gative. See attached d consider any dust it wo consoles. Discustive result of asbecontain asbestos due containing wiring during Jersey for analysis of connected in the forestos insulation under	ve for Chrysotile I pdf of test results. Inside the console to ssing the wire stos in the wire wrap to vibration would be ng dust sampling with a rush order (6-				

- *	Fisheries and Oceans Canada	
*	Fisheries and Oceans Canada Canadian Coast Guard	

Specify	
. Immediate/Direct Causes (Required) (Check all	
ubstandard Actions	Substandard Conditions
Bypassing safety devices	Congested or restricted area
Failure to check or monitor	Defective tools, equipment or materials
Failure to communicate/coordinate	Excessive noise
Failure to follow procedure/policy	Heat/cold exposure
Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE
Failure to react/correct	☐Inadequate communication
Failure to service equipment properly	☐Inadequate guards or barriers
Failure to use PPE	☐Inadequate information/data
Failure to warn or secure	☐Inadequate instruction/procedure
]Horseplay	☐ Inadequate preparation/planning
]Improper lifting	☐Inadequate support/assistance
Improper loading, placing, mixing	☐Inadequate ventilation
Improper position/posture for task	☐Inadequate warning system
Operating at improper speed	☐Lack of tools, equipment or materials
Using defective equipment	Poor housekeeping
Using equipment improperly	☐ Presence of harmful materials
Other action (Specify)	Radiation exposure
	Uneven ground/terrain
	Weather or environmental conditions
	Other condition (Specify)
nmediate/Direct Causes (Required)	
Of the above checked immediate/direct causes prov	ide details as to which one was the leading cause of the incident.
	vessel construction. The asbestos insulated wire makes up part of the ed with a cloth wrap or PVC insulated. The wiring in the Bridge consoles

*	Fisheries and Oceans Canada Canadian Coast Guard
---	-----------------------------------------------------

G. Basic/Root Causes (Required) (Che	eck all that apply)				
Personal Factors			Job Factors			
☐Emotional stress			Abuse or misuse of equip	ment		
Fatigue			☐Inadequate engineering o	or design		
Lack of knowledge and/or skill			☐Inadequate hazard asses	sment		
☐Physical stress or capability			☐ Inadequate personnel to	complete ta	sk	
Rushing or inattention			☐ Inadequate tools/equipme	ent/materials	3	
☐Other (Specify)			☐Inadequate training and/o			
			Inadequate work standard	-		
			Lack of enforcement of pr		•	
			Standards/procedures no	t developed		
			☐ Wear and tear			
			Other (Specify)			
			Incomplete identification an materials onboard	d abatemen	t of hazardous	
Basic/Root Causes (Required)						
Of the above checked Basic/Root cause Electrical insulation on wires installed of Surveys. Asbestos-containing wiring corubber jacketed bronze armored cables.	utside of high hea	at location	on had been overlooked in pr s to rubber insulated cloth wra	evious Asbe apped wires	estos Management which are part of	
H. Witnesses (As Required) (NOTE: Witinformation)	tness statements r	may be re	equired depending on the severit	ty of the incid	ent – Attach all additional	
Name of Witness # 1 Telephone # Name of Witness # 3 Telephone #						
Matthew Jackson C/E	250-882-1273					
Name of Witness # 2	Telephone #		Name of Witness # 4		Telephone #	
Steve Buss S/E	250-882-1273					
I. Property / Equipment Damage (As F	Required)					
Nature and extent of property damage					Estimated Cost (\$)	
J. Corrective & Preventative Measures recurrence)	s (Required) (De	escribe o	corrective measures taken ar	nd/or recomm	mended to prevent	
Currently awaiting test results of dust from Plan for abatement of dust and wiring to Extensive work on the bridge consoles	be determined			January 30,	2018.	
Corrective action responsibility assigned	d to	Date to	be completed (YYYY-MM-DD)	Follow-up	Date (YYYY-MM-DD)	
Chief Engineer/Vessel Maintenance Ma	nager	ASAP				



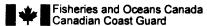
	Fisheries and Oceans Canada Canadian Coast Guard
	K. Investigation Completed By (F
Ì	Name of person investigating

K. Investigation Completed By (Required)					
Name of person investigating	Telephone	#	Signature		
Matthew Jackson	250-882-12	273	Matt Jackson	Dig DN err De	grafly signed by Mart Jackson I comfelfal Jackson on-Coast Guard, ou-Coast Guard, Intel®artisticSpourageou, pcc, ac. ac/CA se 2018,01,27 10.52.32-0er007
Title Chief Engineer		Date (YYYY	′-MM-DD)	2018-0)1-27
Email address BartlettCE@ccgs-ngcc.gc.ca					
Investigators comments					
Surprising positive test result for asbestos in an app this mineral. Wire and wire wrap (jacket) look to be decision on course of action.	lication that in good con	would not be dition. Await	nefit from the once t ing test results of the	hought surrou	of advantages of using nding dust to make
L. Workplace OHS Committee / Health and Safety	Represent	ative Partici	pation (Required)		
Workplace OHS Committee Member / Health and Sa	fety Repres	entative Info	mation		
Name	Telephone	#	Signature	- Chan	amplify the Charles
Chris Couch	250.213.36	85	Chris Couch	DN em De	ptally signed by Chris Couch .cr=Chris Couch or-Canadan Coast Guard, ou=CCGS Bartlett, ad=BartlettCHOgeoga-ngoc.gc.ca, c=CA te 2018.01.28 10 04 56 -0800*
Title	Email addr	ess			Date (YYYY-MM-DD)
Chief Officer	BartlettCH	O@ccgs-ngc	c.gc.ca		2018-01-28
Workplace OHS Committee Member/Health and Sa	fety Represe	entative comm	ments		
During this patrol's OHS Meeting, we will review the of asbestos containing materials (ACM). We will als Concur with this report, and nothing further to add.					
M. Commanding Officer or Superintendent/Manag	ger (Require	ed)			
Name of Commanding Officer / Responsible Manag	er Teleph	one #	Signature		
Michael McCullagh	250-88	2-3864	Michael McC	ullagh	Diptrifly signed by Michael McCullagh DN cri-Michael McCullagh, or-Canadian Coast Guard Fleet, our-CCSS Greate, enachestCoglear coge-rigor, gc.cat, crCA Date, 2018,01,28 10 09 41 -0900*
Title	Email a	ddress			Date (YYYY-MM-DD)
Commanding Officer	Bartlett	CO@ccgs-n	gcc.gc.ca		2018-01-28
Has the relevant task(s) on the Site Specific Risk Registe	r been reviev	ved and/or mo	dified as a result of th	e incide	nt? ⊠Yes ⊡No
Additional comments to include additions, deletions	or changes	o corrective	action recommendat	ions fro	m Section "J"
Asbestos Management plan updated to reflect ACM Concur with proposed Corrective & Preventative Me		nsuls.			

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and





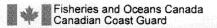
the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the <u>Privacy Act</u> and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: <u>DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca</u>.





INCIDENT INVESTIGATION REPORT (IIR) 9.B.1 NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence. A. Type of Incident (Required) (Choose only one) Disabling Injury (visit to medical professional, time lost) Loss of Consciousness due to electric shock or toxic atmosphere ☐ First Aid Near Miss Minor Injury (visit to medical professional, no time lost) Pollution ☐ Activation of an Emergency Procedure Property Damage Fire or Explosion (Shore only) M Unsatisfactory Condition Other (specify) B. General Information (Required) Employer's (Department) Name Site/Vessel Name (and official number) Canadian Coast Guard **CCGS Bartlett** Date of Report (YYYY-MM-DD) 2018-02-12 Mailing Address 25 Huron Street, Victoria BC V8V 4V9 Supervisor's Telephone # 250.213.3685 Name of Responsible Supervisor Captain Mike McCullagh Organization (Select One) National HQ ☐ Coast Guard College Region (if selected, choose Directorate and Program/Branch below) Regional Directorate (Select One) ☐ AC's Office ☐ Fleet ☐ IBMS □ ITS ☐ Incident Management □ Navigational Programs Program/Branch (Select One) Refit and Maintenance ☐ AtoN MarSup ☐ MCI ☐ ROC ☐ Canso □ CGSS ☐ MCTS SAR □ E&I ☐ ME ☐ Science FFM (C&P) ⋈ MNS ∇essels of Concern □ ER ☐ MSET ☐ Other Ice Ops Business □ILS C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed. Surname Given Name Initial(s) Age Gender Job Title Years of experience in current Female Male position **Employment Status** Contractor □Indeterminate Term Casual/Relief Program Client Student Other (Specify)

Canadian Co	past Guard					
D. Incident inform	ation (Required)					
Did this involve a m	otor vehicle* accident	? Yes ☐ No ⊠ *If	yes, please ensure t impleted.	he <u>Motor Vehicl</u>	e Accident (MVA)	Report is
Did this involve Heli	copter Operations?	Yes ☐ No ⊠ Di	d this incident involve	Small Craft Op	erations? Y	es No [
Location of Inciden	t (include geographic	al name of body of w	ater, waterway, harbo	our, latitude, lon	gitude if applicabl	e)
Juan de Fu ca Stra i	t - WCVI Transiting N	orth				
Date of Incident (YY		I-31	Time of Incident	(Local)	15:39	
Body part inj ure d (if						
Abdomen	☐ Back	☐ Eye	☐ Neck	☐ Knee	☐ Pel	vis / Groin
Arm		nternal Foot	☐ Head	☐ Leg	☐ Sho	oulder
Auditory	Chest	☐ Hand	Hip	Multiple	injuries	nown
ature of injury (if k	nown)		***************************************			
] Burns			Multiple Injurie			
] Fractures				_	muscle/tendon inj	ıry
] Injury to Nerves	and Spinal Cord		☐ Wounds, Lace	erations and Am	putations	
] Intracranial Injur	<u>y</u>		Unknown			
	formation (Required	l)				
pe of Event						
Caught in or bet	ween	☐ Exposure to a t	raumatic event	☐ Slips, tri	ps and falls	
Contact with har	mful substance	☐ Mechanical/Eq	uipment Failure	Struck b	y or against	
Exposure to Elec	ctricity		harm unknown	☐ Vehicle	incident	
Exposure to Fire	r	Overexertion		⊠ Other (s	pecify)	
Exposure to hea	t/cold	Repetitive Moti	on			····
Exposure to nois	ie –			Unknown d Asbestos	lust identified as o	ontaining
	ent - Sequence of Eve e investigation or phot		al sheets, chart(let)s,	diagrams, locat	ion of any failed o	r damaged
est results from th resented by the in round and returne fter the cracked A	1539 Results receive e consoles fell in the ternational Asbestos d to Victoria and was CM bulkhead IIR clea	high range compared Testing Laboratories secured @ 2350. Ad in-up fell in the model	I with expected ambion (iATL). In consultationally results from the range compared	ent levels based on with the RD f n dust samples with "experienc	l on "experience s Fleet, the vessel t taken in the Laun e standards".	standards" urned dry Room
ressel to develop a performed the visua similar morphology	0800 Northwest Envir sampling/testing and al and air clearance in wiring which tested p acking in MCR STBD	I remediation plan. N espection and docume ositive in the Wheelh	WE provided third pa entation. Bulk samp ouse. Sample result	arty oversight of les taken from v s returned positi	the remediation viring in MCR con	work and sole due to
ook for evidence of content of latent du- results for the low v detection 0.01f/ml. evel of detection 0. 2018 Dust Cleanup	1000 NWE on-board of the spread of asbest st and air monitoring to colume air sampling w 1900 sample results 01f/ml. NWE develop : Various Compartme due to open wire tran	tos contamination. The determine whether were received and ver conveyed by NWE from the Limited Haza ents. Compartments of	he test consists of su the fibres have beer bally conveyed by N om the longer runnin rdous Materials Risk or spaces included: V	rface testing to a rendered airbo NE, the results of high volume p Assessment an	characterize the a rne. 1630 the first were below the le umps were also b d Safe Work Produding consoles, \	asbestos st set of vel of pelow the cedures: /oid Space

February 3, 2018 - NWE returned to perform long duration (10 hours) sampling in the same locations. The sample volume must be greater than 1425 liters to qualify the results to a prove the air meets the Air Clearance/Permissible Exposure Limit for continuous occupation of 0.01f/ml. Results received and some samples were above the limit of detection but below the limit of quantitation. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorksafeBC exposure limits"

Dust samples to couriered by NWE to iATL February 5, 2018 with quick turn around time of samples of 6 hours ordered. Hold up clearing customs at the border required re-sampling on Feb 8, 2018.

February 4, 2018 - Canadian Haz-mat began work cleaning Wheelhouse consoles with oversight provided by NWE.

February 5, 2018 - Canadian Haz-mat finished work in the Wheelhouse and started and finished work in the Laundry Room. Both spaces passed visual inspection by NWE.

February 6, 2018 - Canadian Haz-mat on-board removing thermocouple extension wire from ER and MCR console. MCR console cleaning started and completed. All unidentifiable packing disposed of through Canadian Hazmat. Stbd MCR cleaning started and completed. NWE air clearance samples from Wheelhouse and Laundry Room passed.

February 7, 2018 - Canadian Haz-mat on-board setup and performing cleaning in Bridge Void Space. Stbd MCR, ER, and MCR passed visuals inspection by NWE. NWE air clearance sampling from MCR and Stbd MCR taken and passed.

February 8, 2018 - Canadian Haz-mat onboard completed cleaning in Bridge Void Space. Space passed visual inspection by NWE. NWE air clearance sample from Bridge Void Space passed. Dust wipe samples retook in ER, MCR, and HVAC as the initial samples were still held up at customs.

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE:"We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits.".

Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals. The area was wet wiped after the sample taken. MCR passed air and visual clearance by NWE. As per NWE recommendation, console top was HEPA vacuumed. One sample taken from ER in an inaccessible place returned "elevated". Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: "Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer." Follow up sampling to be conducted upon return to Victoria. Defect entered.

Reports attached:

- -iATL dust wipe samples results
- -NWE air sample test results alongside
- -NWE Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments
- -NWE Asbestos Air and Visual Clearance Documents for effected spaces
- -NWE air sample test results while underway at sea conditions

Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?	⊠Yes □No
Specify	
A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulat Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. console, MCR Stbd Stores and Laundry Room access was restricted upon receiving the results on asbestos materials found.	Void space, MCR
Man applicant provention training provided in relation to the duties of the injured employee prior to the inciden	t2 Tyes No



_		
	Fisheries and Oceans Canada	
200		
Ŧ	Fisheries and Oceans Canada Canadian Coast Guard	

Specify	
F. Immediate/Direct Causes (Required) (Check all th	at apply)
Substandard Actions	Substandard Conditions
Bypassing safety devices	Congested or restricted area
Failure to check or monitor	Defective tools, equipment or materials
Failure to communicate/coordinate	Excessive noise
Failure to follow procedure/policy	☐Heat/cold exposure
⊠Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE
Failure to react/correct	☐ Inadequate communication
Failure to service equipment properly	☐Inadequate guards or barriers
Failure to use PPE	☐Inadequate information/data
Failure to warn or secure	☐ Inadequate instruction/procedure
Horseplay	☐ Inadequate preparation/planning
☐Improper lifting	☐Inadequate support/assistance
☐Improper loading, placing, mixing	☐ Inadequate ventilation
☐Improper position/posture for task	☐Inadequate warning system
Operating at improper speed	Lack of tools, equipment or materials
Using defective equipment	☐Poor housekeeping
Using equipment improperly	
Other action (Specify)	Radiation exposure
	─────────────────────────────────────
	☐ Weather or environmental conditions
	Other condition (Specify)
mmediate/Direct Causes (Required)	
Of the above checked immediate/direct causes provid	te details as to which one was the leading cause of the incident.
	Additional wires of the same morphology as the ACM wires on the bridge of the dust is from pulling asbestos containing cabling throughout the

~ * ~	Fish eries	and	Oceans	Canada
¥	Fisheries Canadian	Coa	ast Guar	d

G. Basic/Root Causes (Required) (Che	eck all that apply)				
Personal Factors			Job Factors			
☐Emotional stress			☐Abuse or misuse of equip	buse or misuse of equipment		
Fatigue			☐Inadequate engineering or design			
□ Lack of knowledge and/or skill □ Inadequate hazard assessment □ Lack of knowledge and/or skill □ Lack of knowledge and						
Physical stress or capability Inadequate personnel to complete task						
Rushing or inattention Inadequate tools/equipment/materials						
Other (Specify) Inadequate training and/or familiarizat			tion			
☐ Inadequate work standard/procedure ☐ Lack of enforcement of procedure or supervision						
			-		supervision	
☐ Standards/procedures not developed ☐ Wear and tear						
Other (Specify)						
Basic/Root Causes (Required)						
Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident. Incomplete identification and abatement of asbestos on-board. Depth and scope of previous Asbestos Surveys did not identify						
Incomplete identification and abatement the wiring in these consoles.	of asbestos on-	board. (Depth and scope of previous	Asbestos Su	urveys did not identify	
The willing in these consoles.						
H. Witnesses (As Required) (NOTE: Witinformation)	tness statements n	nay be re	equired depending on the severit	ty of the incide	ent – Attach all additional	
Name of Witness # 1	Telephone #		Name of Witness # 3		Telephone #	
Matthew Jackson CE	250-882-1273		Steve Buss SE		250-213-3685	
Name of Witness # 2	Telephone #		Name of Witness # 4		Telephone #	
Mike McCullagh CO	250-882-3864					
I. Property / Equipment Damage (As R	(equired					
Nature and extent of property damage					Estimated Cost (\$)	
J. Corrective & Preventative Measures	(Required) (Da	scribe o	corrective measures taken an	nd/or recomm	nended to prevent	
recurrence)	- (Noquirou) (B					
Future Asbestos Management Surveys						
As per NWE recommendation future wo						
asbestos work due difficultly of removing wiring and bronze braid on the electrica		uie Will	ig, terminai strips, circuit boa	i us/compon	ents, Gour wrap on	
Work outside of normally accessed spa	ces/equipment m	nay enco	ounter the possibility of asbes	stos debris a	nd be considered in	
the risk assessment prior to starting wo		ا - خسلم میں	to payor findings desired to - 1	nunctiontie-		
Vessel Specific Asbestos Management Upon return to Victoria additional dust s						
Training arranged for 5 crew members to	for Asbestos Awa	areness	and Abatement on February	22/23.		
Corrective action responsibility assigned			be completed (YYYY-MM-DD)		Date (YYYY-MM-DD)	
Chief Engineer/Marine Engineering						
		L				

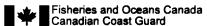
*	Fisheries Canadian	and	Ocean	s Canada	3
7	Canadian	ı Coa	ast Gua	rd	

K. Investigation Completed By (Required)	·								
Name of person investigating	Telephone #		Signature Matt Jackson	Digitally signed by Natt Jackson DN craft inches a Coast Guard quaCoast Guard					
Matthew Jackson	250-882-12	2/3	wall Jackson	Digitally signed by Matt Licelson DN crivitat Unilson, or-Coset Guard, our-Coset Guard, email-Estrated CE@cogs-rgor.gc.ca, c=CA Date: 2018.02.13 06:37-47-06'00'					
Title Chief Engineer		Date (YYYY-	MM-DD) 13/2/	2017					
Email address BartlettCE@ccgs-ngcc.gc.ca									
Investigators comments									
Depending on the anticipated service life of the Bartlett, consideration should be given for a thorough abatement plan to be developed. Future Asbestos Management Surveys to include regular air and dust sampling. Bulk sampling frequency and scope to be increased to further identify/clear areas on-board of ACM. At sea air sampling plan was developed with NWE, and performed to ensure air quality while at sea prior to returning the vessel to operational status.									
L. Workplace OHS Committee / Health and Safety Representative Participation (Required)									
Workplace OHS Committee Member / Health and Safety Representative Information									
Name	Telephone	# 5	Signature						
Steve Buss	250-213-36	885	Steve Buss	Digitally signed by Steve Buss DN: cm-Steve Buss, or-Canadian Coast Guard, ou=DFO, mail=SartelbE@goop.ngc.gc.ca, c=CA Date. 2018.02.13 08.45.05-08'00'					
Title	Email address			Date (YYYY-MM-DD)					
Senior Engineer	BartlettSE(②ccgs-ngcc.go	c.ca	2018-02-13					
Workplace OHS Committee Member/Health and Sa	fety Represe	entative comm	ents						
	Investigation performed to complete satisfaction of the Workplace OHS Committee Member. A well thought out plan has been developed for future testing to ensure the health and safety of all crew members in the future.								
M. Commanding Officer or Superintendent/Manag	ger (Require	ed)							
Name of Commanding Officer / Responsible Manag	er Teleph	one#	Signature						
Michael McCullagh	250-88	2-3864	Michael McCullag	Digitally signed by Michael McCullagh 101. on=Michael McCullagh, or-Canadian Coast Guard Fleet, ou=CCSS Barriett, email-BarriettCO@bar.copa-ngcc.gc.ca. c=CA Date: 2018.02.13 09:15.53 -09:00					
Title	Email a	address		Date (YYYY-MM-DD)					
Commanding Officer	Bartlet	:CO@ccgs-ng	cc.gc.ca	2018-02-13					
Has the relevant task(s) on the Site Specific Risk Registe	r been reviev	ved and/or mod	lified as a result of the incid	ent? ⊠Yes □No					
Additional comments to include additions, deletions	or changes	to corrective a	ction recommendations fr	om Section "J"					
Concur with corrective and preventative measures adopted, and the heightened awareness and vigilance with regard to ACM containing work spaces.									

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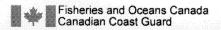
the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

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INCIDENT INVESTIGATION REPORT (IIR)

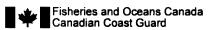
9.B.1

			eted within 30 days of the occurrer	ice.	ection 3(1),	
A. Type of Incident (Require	d) (Choose only one)					
☐ Disabling Injury (visit to med	dical professional, time los	t) 🗌 Loss of	f Consciousness due to elec	tric shock or toxic a	tmosphere	
☐ First Aid		☐ Near M	liss			
☐ Minor Injury (visit to medica	I professional, no time lost	t) 🗌 Pollutio	on			
☐ Activation of an Emergency	Procedure	☐ Proper	ty Damage			
☐ Fire or Explosion (Shore on	y)	Unsatis	sfactory Condition			
Other (specify)						
B. General Information (Requ	uired)					
Employer's (Department) Nam	e	Site/\	/essel Name (and official nu	ımber)		
Coast Guard Fleet		CCG	S Bartlett			
Date of Report (YYYY-MM-DD)	Mailing Add	Iress 25 Hu	ron Street, Victoria, BC, V8	V 4V9		
Name of Responsible Supervis	or M. McCullagh	Super	visor's Telephone # 250-88	32-3864		
Organization (Select One)						
☐ National HQ ☐ Co	ast Guard College 🛛 🖂	Region (if sele	cted, choose Directorate ar	id Program/Branch l	below)	
Regional Directorate (Select Or						
☐ AC's Office ⊠ Fleet	☐ IBMS ☐ ITS	_ Ind	cident Management [☐ Navigational Pro	grams	
Program/Branch (Select One)						
☐ AtoN	☐ MarSup			d Maintenance		
☐ Canso	☐ MCI		☐ ROC			
CGSS	☐ MCTS		☐ SAR			
☐ E&I	☐ ME		☐ Science			
☐ EFM (C&P)	⊠ MNS		☐ Vessels of Concern			
				☐ Other		
ER	☐ MSET		☐ Other			
☐ ER ☐ Ice	☐ MSET ☐ Ops Busin	ess	☐ Other [
☐ ER ☐ Ice ☐ ILS	☐ Ops Busin					
☐ ER ☐ Ice	Ops Busin	ly if the emplo		be completed by the	ne injured	
☐ ER ☐ Ice ☐ ILS C. Employee Data (As Requiremployee's supervisor or their or	Ops Busin	ly if the emplo		be completed by the	ne injured	
☐ ER ☐ Ice ☐ ILS C. Employee Data (As Require	ops Busin red) * (to be completed on designate. All fields shall b	ly if the emplo	yee sustains an injury). * To	Age	ne injured	
☐ ER ☐ Ice ☐ ILS C. Employee Data (As Requiremployee's supervisor or their constraints)	Ops Busing	ly if the emplo	yee sustains an injury). * To	Age	ne injured	
☐ ER ☐ Ice ☐ ILS C. Employee Data (As Requiremployee's supervisor or their of Surname ☐	ops Busin red) * (to be completed on designate. All fields shall b	ly if the emplo	yee sustains an injury). * To	Age	ne injured	
☐ ER ☐ Ice ☐ ILS C. Employee Data (As Requiremployee's supervisor or their of Surname ☐ Gender ☐ Female ☐ Male	ops Busin red) * (to be completed on designate. All fields shall b	ily if the emplo e completed.	yee sustains an injury). * To	Age		

Fisheries and Oceans Canada Canadian Coast Guard				
D. Incident Information (Required)				
Did this involve a motor vehicle* acciden		es, please ensure the pleted.	Motor Vehicle Accide	nt (MVA) Report is
Did this involve Helicopter Operations?	Yes ☐ No ⊠ Did	this incident involve	Small Craft Operations	? Yes ☐ No ⊠
Location of Incident (include geographic	al name of body of wat	er, waterway, harbou	ır, latitude, longitude if	applicable)
Victoria Coast Guard Base				
Date of Incident (YYYY-MM-DD) 2018-0	1-27	Time of Incident (L	ocal) 1345	
Body part injured (if applicable)		. <u> </u>		
Abdomen Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin
☐ Arm ☐ Body System /	Internal 🔲 Foot	☐ Head	☐ Leg	☐ Shoulder
☐ Auditory ☐ Chest	☐ Hand	☐ Hip		Unknown
Nature of injury (if known)				
Burns				
☐ Fractures		☐ Traumatic joint/	ligament and muscle/te	endon injury
☐ Injury to Nerves and Spinal Cord		Wounds, Lacera	ations and Amputations	S
☐ Intracranial Injury		Unknown		
E. Investigation Information (Required	d)			
Type of Event				
Caught in or between	☐ Exposure to a tra	umatic event	Slips, trips and fa	alls
Contact with harmful substance	Mechanical/Equi	pment Failure	Struck by or aga	inst
Exposure to Electricity	Mechanism of ha	ırm unknown		
☐ Exposure to Fire	Overexertion			
Exposure to heat/cold	☐ Repetitive Motion	1		
Exposure to noise			Cracked seam in as	sbestos bulkhead
Description of Incident - Sequence of Evparts relevant to the investigation or pho		sheets, chart(let)s, d	iagrams, location of an	y failed or damaged
Chief Engineer discovered a crack and t aft porthole tube. The cracked and split damage to panels.				
Was a Risk Assessment performed prior	to commencement of the	ne task which resulte	d in the incident?	☐Yes ☐No
Specify				
Manage Ma				
Was accident prevention training provide	d in relation to the dutie	es of the injured empl	oyee prior to the incide	ent? Yes No
Specify				

1 	Fisheries	and	Oceans	Canada	
7	Fisheries Canadian	Coa	ast Guard	d	

F. Immediate/Direct Causes (Required) (Check all that apply)	
Substandard Actions	Substandard Conditions
☐Bypassing safety devices	Congested or restricted area
Failure to check or monitor	Defective tools, equipment or materials
Failure to communicate/coordinate	Excessive noise
Failure to follow procedure/policy	Heat/cold exposure
Failure to identify hazard/risk	☐ Inadequate/improper PPE or use of PPE
Failure to react/correct	Inadequate communication
Failure to service equipment properly	☐Inadequate guards or barriers
Failure to use PPE	Inadequate information/data
Failure to warn or secure	Inadequate instruction/procedure
☐Horseplay	Inadequate preparation/planning
☐ Improper lifting	Inadequate support/assistance
Improper loading, placing, mixing	Inadequate ventilation
☐Improper position/posture for task	☐ Inadequate warning system
Operating at improper speed	Lack of tools, equipment or materials
☐Using defective equipment	Poor housekeeping
Using equipment improperly	⊠Presence of harmful materials
Other action (Specify)	Radiation exposure
	☐Uneven ground/terrain
	Other condition (Specify)
Immediate/Direct Causes (Required)	
Of the above checked immediate/direct causes provide details a	as to which one was the leading cause of the incident.
Suspected cause or contributing factor: CCGS Bartlett was securing at Victoria Coast Guard Base. Wind	d was E'ly 29 knots, on Bartlett's port quarter, resulting in the
setting of the starboard stern towards the jetty. Upon arrival the	starboard stern quarter in way of the laundry room porthole tube
touched a piling that is standing proud of the jetty face. This tou	ching event may have cracked the interior asbestos bulkhead
lining panel and joining seams.	
G. Basic/Root Causes (Required) (Check all that apply)	
Personal Factors	Job Factors
Emotional stress	Abuse or misuse of equipment
Fatigue	Inadequate engineering or design
Lack of knowledge and/or skill	Inadequate hazard assessment
Physical stress or capability	Inadequate personnel to complete task
Rushing or inattention	Inadequate tools/equipment/materials
Other (Specify)	Inadequate training and/or familiarization
	Inadequate work standard/procedure
	Lack of enforcement of procedure or supervision
	Standards/procedures not developed
	Wear and tear
	Other (Specify)
	Ship characteristics combined with weather.



Basic/Root Causes	(Red	uired
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Of the above checked Basic/Root causes	provide details as to which one was	the leading cause of the incident.
----------------------------------------	-------------------------------------	------------------------------------

See attached excerpt from "CCGS Bartlett Maneuverability Discussion"

- · Large sail area aft resulting in an "unbalanced" design affected by minimal cross-winds.
- The impact of having a significant sail area fully aft in conditions other than the wind directly ahead results in the transfer of the pivot point of the vessel forward thus producing a larger than expected lever effect.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Mike McCullagh CO	250-882-3864	Christopher Couch Ch/O	250-413-2800
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Matthew Jackson CE	250-882-1273	Joseph Van Der Sande 3rd/O	250-413-2800

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
Abatement contractor clean up of possibly asbestos containing debris. Encapsulation of exposed asbestos in bulkhead lining panels.	1,500\$

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Asbestos: Space secured against entry and signs posted. Abatement contractor to be contacted (on the next business day) to clean up debris and encapsulate the exposed asbestos.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)
Chief Engineer / Marine Engineering	2018-01-30	

K. Investigation Completed By (Required)

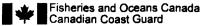
Name of person investigating		Telephone #		Signature		
	Matthew Jackson	250-882-1273		Matt Jackson	Digitally signed by Natt Jackson DN orr Matt Jackson, on-Coset Guard, our-Coset Guard, email-Bashedit-Eglogue-report pc.cc, on-CA Date: 2018.01.28 16 48 18 -08700*	
	Title Chief Engineer		Date (YYY)		2018-01-28	_

···· -···· = ··· g ······					
		<u> </u>			
·mail addrace	RartlettCE@ccgs_ngcc gc ca				

Investigators comments

Quick action was taken to restrict access to a possibly contaminated space after discovery of the damaged bulkhead lining panels. Plan for clean up and encapsulation in place.





Workplace OHS Committee Member / Health and Saf	ety Penrecentative	Information		
		1		
	Telephone #	Signature	Orgitally signed by Chris Couch	
Chris Couch	250.423.2800	Chris Couch	DN: cn=Chris Couch, o=Canadian Coast Guard, ou=CCGS Bartlett, email=SartlettCHO@cop=ngcc gc.ca, c=CA Date: 2018.01.28 16:51:00 -06'00'	
Title	Email address Date (YYYY-MN			
Chief Officer	BartlettCHO@ccgs	s-ngcc.gc.ca	2018-01-28	
Workplace OHS Committee Member/Health and Safe	ety Representative	comments	<u> </u>	
M. Commanding Officer or Superintendent/Manag	er (Required)			
Name of Commanding Officer / Responsible Manage	r Telephone #	Signature		
Michael McCullagh	250-882-3864	Michael McCull	Digitally aigned by Michael McCullagh DN: on-Michael McCullagh; on-Canadhan Coast Guard Fleet, our-Closs Bartist, enia-Electric/Oligher.cogs-ingo: gc.ca; on-C Date: 2016.01.26 17 25 22 -08'00'	
Title	Email address		Date (YYYY-MM-DD)	
Commanding Officer	BartlettCO@co	cgs-ngcc.gc.ca	2018-01-28	
Has the relevant task(s) on the Site Specific Risk Register	been reviewed and	or modified as a result of the in	ncident? XYes N	
Additional comments to include additions, deletions of	r changes to corre	ctive action recommendation	is from Section "J"	

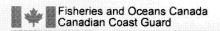
Privacy Notice

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						98
NOTE: If this incident falls under the de a Repor	finition of a reportable Marine C t of a Marine Occurrence form				<u>ulations,</u> Section :	3(1),
A. Type of Incident (Required) (Choose only one)					
☐ Disabling Injury (visit to medica	professional, time lost)	Loss of Co	ensciousness due to	electric shock	or toxic atmos	phere
☐ First Aid		☐ Near Miss				
☐ Minor Injury (visit to medical pro	ofessional, no time lost)	☐ Pollution				
☐ Activation of an Emergency Pro	ocedure	☐ Property □	amage			
Fire or Explosion (Shore only)		Unsatisfac	tory Condition			
Other (specify)						
B. General Information (Require	d)					
Employer's (Department) Name		Site/Ves	sel Name (and officia	al number)		
Canadian Coast Guard		CCGS B	artlett			
Date of Report (YYYY-MM-DD)	Mailing Addre	ss 25 Huron	Street, Victoria, BC,	V8V 4V9		
Name of Responsible Supervisor Ross McKenzie Supervisor's Telephone # 250-882-1273						
Organization (Select One)						
☐ National HQ ☐ Coast	Guard College 🔀 Re	gion (if selecte	d, choose Directorat	e and Program	n/Branch belov	v)
Regional Directorate (Select One)						
☐ AC's Office ⊠ Fleet ☐	IBMS ☐ITS	☐ Incide	nt Management	☐ Navigat	ional Program	S
Program/Branch (Select One)						
☐ AtoN	☐ MarSup		⊠ Refit	t and Maintena	ince	
☐ Canso	☐ MCI		ROC			
☐ cgss	☐ MCTS		☐ SAR			
☐ E&I	☐ ME		☐ Scie	nce		
☐ EFM (C&P)	☐ MNS		☐ Vess	sels of Concer	n	
☐ ER	☐ MSET		☐ Othe	er 🗔		
☐ Ice	Ops Busines	S				
☐ ILS						
C. Employee Data (As Required)			sustains an injury).	* To be compl	eted by the inj	ured
employee's supervisor or their desi	gnate. All fields shall be	completed.				
Surname	Given Name		Initial(s)	Ag	e	
Gender	Job Title		Years of evo	erience in curr	ent	
Female Male	13		position	chence in cult		
Employment Status						
☐ Indeterminate ☐ Term	Casual/Reliet	Progra	m Client Stude	ent [Contractor	
Other (Specify)						

INCIDENT INVESTIGATION REPORT (IIR)

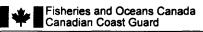


D. Incident Information (Required)				
Did this involve a motor vehicle* accident			he Motor Vehicle Ac	cident (MVA) Report is
Did this involve Helicopter Operations?	con	npleted. this incident involve	e Small Craft Operati	ons? Yes ☐ No ⊠
Location of Incident (include geographic			·	
Engine Room, CCGS Bartlett, Victoria C				
Date of Incident (YYYY-MM-DD) 2018.01	.08	Time of Incident	(Local) 0950	hours
Body part injured (if applicable)			(2004)	
☐ Abdomen ☐ Back	☐ Eye	□ Neck	☐ Knee	☐ Pelvis / Groin
☐ Arm ☐ Body System / I		☐ Head	☐ Leg	☐ Shoulder
Auditory Chest	☐ Hand	Hip	☐ Multiple injuri	
Nature of injury (if known)				
Burns	V VIET COMMEN	Multiple Injurie	es	***************************************
Fractures		☐ Traumatic join	t/ligament and musc	le/tendon injury
Injury to Nerves and Spinal Cord		Wounds, Lace	erations and Amputat	ions
Intracranial Injury		Unknown		
E. Investigation Information (Required	1)			
Type of Event				
Caught in or between	Exposure to a tra	aumatic event	Slips, trips ar	nd falls
Contact with harmful substance	Mechanical/Equi	ipment Failure	Struck by or	against
Exposure to Electricity	Mechanism of h	arm unknown	☐ Vehicle incide	ent
Exposure to Fire	Overexertion			v)
Exposure to heat/cold	☐ Repetitive Motio	n		
Exposure to noise			Hazardous mate	erial spill
Description of Incident - Sequence of Evparts relevant to the investigation or photon		sheets, chart(let)s,	diagrams, location o	f any failed or damaged
The Bartlett was informed by our Asbesto Material Assessment prior to replacing the clear of and not disturb the pile of debris the tank, and to isolate that area of the e Contractor removed the ACM & Lead Pa	ne bulkhead insulation containing asbestos (ngineroom - and to ha	behind the Enginer old gasket material) we suitable qualified	oom Dirty Oil Tank. , and the lead paint u professionals remov	We were advised to stay used on the base below we the hazards as ASAP.
Man a Diak Assessment performed price t	to commencement of t	the task which resul	ted in the incident?	⊠Yes □No
Was a Risk Assessment performed prior t				
Specify				

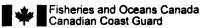
Specify N/A

*	Fisheries and Oceans Canada Canadian Coast Guard
┯	Canadian Coast Guard

F. Immediate/Direct Causes (Required) (Check all that apply)						
Substandard Actions	Substandard Conditions					
Bypassing safety devices	Congested or restricted area					
Failure to check or monitor	Defective tools, equipment or materials					
Failure to communicate/coordinate	Excessive noise					
Failure to follow procedure/policy	Heat/cold exposure					
Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE					
☐Failure to react/correct	☐ Inadequate communication					
Failure to service equipment properly	☐Inadequate guards or barriers					
☐Failure to u se PPE	☐Inadequate information/data					
Failure to warn or secure	☐Inadequate instruction/procedure					
Horseplay	☐ Inadequate preparation/planning					
☐ Improper lifting	☐ Inadequate support/assistance					
☐Improper loading, placing, mixing	☐ Inadequate ventilation					
☐ Improper position/posture for task	☐Inadequate warning system					
Operating at improper speed	Lack of tools, equipment or materials					
☐Using defective equipment	Poor housekeeping					
☐Using equipment improperly	⊠Presence of harmful materials					
☑Other action (Specify)	Radiation exposure					
None on this occasion, but implies that there was possibly a failure to	Uneven ground/terrain					
identify hazard at a previous time.	Weather or environmental conditions					
	Other condition (Specify)					
Immediate Direct Course (Berning I)						
Immediate/Direct Causes (Required)						
Of the above checked immediate/direct causes provide details a						
	flaterials Assessment identified the hazards before the work was (for ACM & lead paint), it could be said that there was a "Failure					
to identify hazard/risk".						
G. Basic/Root Causes (Required) (Check all that apply)						
Personal Factors	Job Factors					
☐Emotional stress	Abuse or misuse of equipment					
□Fatigue	Inadequate engineering or design					
Lack of knowledge and/or skill	☐ Inadequate hazard assessment					
☐Physical stress or capability	☐ Inadequate personnel to complete task					
Rushing or inattention	Inadequate tools/equipment/materials					
⊠ Other (Specify)	Inadequate training and/or familiarization					
This really was a non-incident, because the hazards were	∏Inadequate work standard/procedure					
identified before work commenced in that area.	Lack of enforcement of procedure or supervision					
	Standards/procedures not developed					
	Wear and tear					
	◯ Other (Specify)					
	This really was a non-incident, because the hazards were					
	identified before work commenced in that area.					



Basic/Root Causes (Required)								
Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident. The "incident" per se, was the identification of several hazards, and the leading cause was prudence & foresight. If the existence of the the hazardous materials debris is construed as an incident in itself, I think that would prove fruitless, considering that the history of the ACM debris is unknown and it was nevertheless dealt with correctly.								
H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)								
Name of Witness # 1	Telephone #		Name of W	fitness # 3		Telephone #		
Ross McKenzie	250-882-127	'3						
Name of Witness # 2	Telephone #		Name of W	fitness # 4		Telephone #		
I. Property / Equipment Damage (As F	Required)							
Nature and extent of property damage						Estimated Cost (\$)		
N/A						0		
J. Corrective & Preventative Measures recurrence)	s (Required) ((Describe	corrective me	easures taken ar	nd/or recomm	mended to prevent		
Corrective action to prevent recurrence To prevent the existence of hazardous a but moreover, and perhaps the only use paint are potential hazards to be encoun The debris & the lead paint were found years ago.	materials woul ful information ntered on the s	ld be to ide n to be gai ship.	entify them al ned from this	I , and remove the IIR is to potenti	ally alert cre			
Corrective action responsibility assigned	d to	Date to	be complete	ed (YYYY-MM-DD)	Follow-up (Date (YYYY-MM-DD)		
Ross McKenzie		2018-0)1-11		2018-01-1	1		
K. Investigation Completed By (Requi	red)		<u></u>					
Name of person investigating	-	Telephone	#	Signature				
Ross McKenzie		250-882-1	273	Ross McK	enzie 🚆	Kelly signed by Ross McKenine ch-Ross McKenine, or-Carvadien Coast Guard, our-CCGS Bardet, ad-bardethinggrand.com, or-CA le: 2018.01.20 10.45 05-08'00'		
Title Chief Engineer			Date (YYYY	/-MM-DD)	2018-0	01-20		
Email address BartlettCE@ccgs-ngcc.gc.ca								
Investigators comments								
The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.								



L. Workplace OHS Committee / Health and Safety Representative Participation (Required)								
Workplace OHS Committee Member / Health and Safety Representative Information								
Name	Telephone #							
Ryan Moore	250-882-1273	ILIVAD NI REGOVA I	Digitally signed by Ryan N. Moore. N. ch=Ryan N. Moore, onCanadian Coast Guard, ou=DFO, mail=Ryan Moore, onCanadian Coast Guard, ou=DFO, mail=Ryan Moore@podip=rogo, co.a. o=CA late. 2018.01.20 16 54 56 -08'00'					
Title	Email address		Date (YYYY-MM-DD)					
Senior Engineer	BartlettSE@ccgs-ngcc.	2018-01-20						
Workplace OHS Committee Member/Health and Safety Representative comments								
Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.								
M. Commanding Officer or Superintendent/Manager (Required)								
Name of Commanding Officer / Responsible Manage								
Michael McCullagh	250-882-3864	Michael McCullagh	Digitally signed by Michael McCollegh DN on=Michael McCollegh, orCanadian Coast Guard Fleet, ou=DCGS Bartlett, enable-partetCOllegn-coge-rigid.ce, c=CA Date: 2018.02.02 10 15 27 -06'00'					
Title	Email address		Date (YYYY-MM-DD)					
Commanding Officer	BartlettCO@ccgs-n	2018-02-02						
Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident?								
Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"								
Concur with intent of IRR								

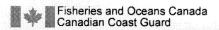
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	ort of a Marine Occurrence form s	oo oo,piotoo mui	55 54,5 51 616 50				
A. Type of Incident (Required)	•						
Disabling Injury (visit to medic		Loss of Consciousness due to electric shock or toxic atmosphe					
First Aid		Near Miss					
☐ Minor Injury (visit to medical professional, no time lost) ☐ Activation of an Emergency Procedure		☐ Pollution ☐ Property Damage					
							Fire or Explosion (Shore only)
Other (specify)							
B. General Information (Requir	ed)						
Employer's (Department) Name		Site/Vessel N	Name (and offic	ial number)			
Canadian Coast Guard		CCGS Bartle	ett				
Date of Report (YYYY-MM-DD)	Mailing Addres	25 Huron Stre	25 Huron Street, Victoria, BC, V8V 4V9				
Name of Responsible Supervisor	Supervisor's	Supervisor's Telephone # 250-882-1273					
Organization (Select One)							
☐ National HQ ☐ Coast	t Guard College 🛛 🖂 Reg	gion (if selected, ch	hoose Directora	ate and Prog	ram/Branch	below)	
Regional Directorate (Select One)							
☐ AC's Office ☐ Fleet ☐	C's Office ⊠ Fleet ☐ IBMS ☐ ITS		☐ Incident Management ☐ Navigational Programs				
Program/Branch (Select One)							
AtoN	☐ MarSup						
Caneo	☐ MCI		□ ROC				
Canso			☐ SAR				
 ☐ cgss	☐ MCTS		L SA				
	☐ MCTS ☐ ME			ence			
 CGSS E&I EFM (C&P)			☐ Sci		ern		
 ☐ CGSS ☐ E&I	_ ME		☐ Sci	ence ssels of Cond	ern		
— CGSS □ E&I □ EFM (C&P) □ ER □ Ice	☐ ME ☐ MNS	3	☐ Sci	ence ssels of Cond	cern		
CGSS E&I EFM (C&P) ER Ice ILS	☐ ME ☐ MNS ☐ MSET ☐ Ops Business		☐ Sci ☐ Ves	ence ssels of Cond ner			
— CGSS □ E&I □ EFM (C&P) □ ER □ Ice	☐ ME ☐ MNS ☐ MSET ☐ Ops Business	f the employee sus	☐ Sci ☐ Ves	ence ssels of Cond ner		the injured	
CGSS E&I EFM (C&P) ER Ice ILS C. Employee Data (As Required employee's supervisor or their des	☐ ME ☐ MNS ☐ MSET ☐ Ops Business	f the employee sus	☐ Sci ☐ Ves	ence ssels of Cond ner . * To be con		the injured	
— CGSS □ E&I □ EFM (C&P) □ ER □ Ice □ ILS C. Employee Data (As Required	ME MNS MSET Ops Business **) * (to be completed only itsignate. All fields shall be completed.)	f the employee sus	Sci Ves	ence ssels of Cond ner . * To be con	npleted by	the injured	
☐ CGSS ☐ E&I ☐ EFM (C&P) ☐ ER ☐ Ice ☐ ILS C. Employee Data (As Required employee's supervisor or their des	ME MNS MSET Ops Business (1) * (to be completed only if signate. All fields shall be completed.) Given Name	f the employee sus	Sci Ves	ence ssels of Cond ner . * To be con	npleted by	the injured	

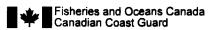
INCIDENT INVESTIGATION REPORT (IIR)



Fisheries and Oceans Canada Canadian Coast Guard						
D. Incident Information (Required)			,			
Did this involve a motor vehicle* accident		es, please ensure ti pleted.	he Motor Vehic	cle Accide	nt (MVA) Report is	
Did this involve Helicopter Operations?	Yes ☐ No ☒ Did	this incident involve	Small Craft O	perations	? Yes ☐ No ⊠	
Location of Incident (include geographica	al name of body of wat	er, waterway, harbo	our, latitude, lo	ngitude if	applicable)	
Engine Room, CCGS Bartlett, Victoria Co	oast Guard Base, Victo	oria harbour				
Date of Incident (YYYY-MM-DD) 2018.01	.08	Time of Incident (Local)	0950 ho	urs	
Body part injured (if applicable)						
☐ Abdomen ☐ Back	☐ Eye	☐ Neck	☐ Knee		Pelvis / Groin	
☐ Arm ☐ Body System / Ir	nternal 🔲 Foot	☐ Head	Leg		Shoulder	
Auditory Chest	☐ Hand	☐ Hip	Multiple	e injuries	Unknown	
Nature of injury (if known)						
☐ Burns		☐ Multiple Injurie	s			
☐ Fractures		☐ Traumatic join	t∕ligament and	muscle/te	ndon injury	
☐ Injury to Nerves and Spinal Cord		☐ Wounds, Lace	rations and Ar	nputations	•	
☐ Intracranial Injury		Unknown				
E. Investigation Information (Required)					
Type of Event						
Caught in or between	Exposure to a tra	umatic event	☐ Slips, t	rips and fa	ills	
Contact with harmful substance	☐ Mechanical/Equipment Failure ☐ Struck by or against		nst			
Exposure to Electricity	☐ Mechanism of ha	rm unknown	☐ Vehicle	incident		
Exposure to Fire	☐ Exposure to Fire ☐ Overexertion		⊠ Other (Other (specify)		
Exposure to heat/cold Repetitive Motion		1	Carrel (apecally)			
Exposure to noise			Hazardou	s material	spill	
Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)						
The Bartlett was informed by our Asbesto Material Assessment prior to replacing the clear of and not disturb the pile of debrise the tank, and to isolate that area of the er Contractor removed the ACM & Lead Pai	e bulkhead insulation I containing asbestos (o ngineroom - and to hav	pehind the Enginero ld gasket material), re suitable qualified	oom Dirty Oil T and the lead professionals	ank. We paint used remove the	were advised to stay on the base below he hazards as ASAP.	
Was a Risk Assessment performed prior to	o commencement of the	ne task which result	ed in the incid	ent?	⊠Yes □No	
Specify					•	
The hazardous material consultant (NWE) taking the various ha	zardous materials	samples was f	ully aware	of the potential risks.	
Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?						
Specify						
N/A						

*	Fisheries and Oceans Canada Canadian Coast Guard
---	--------------------------------------------------

The Canadian Coast Guard						
F. Immediate/Direct Causes (Required) (Check all that apply)						
Substandard Actions	Substandard Conditions					
☐Bypassing safety devices	☐Congested or restricted area					
☐Failure to check or monitor	Defective tools, equipment or materials					
Failure to communicate/coordinate	Excessive noise					
☐Failure to follow procedure/policy	Heat/cold exposure					
☐Failure to identify hazard/risk	☐ Inadequate/improper PPE or use of PPE					
Failure to react/correct	Inadequate communication					
Failure to service equipment property	☐Inadequate guards or barriers					
Failure to use PPE	☐Inadequate information/data					
Failure to warn or secure	☐Inadequate instruction/procedure					
☐Horseplay	☐Inadequate preparation/planning					
☐ Improper lifting	☐Inadequate support/assistance					
☐Improper loading, placing, mixing	☐ Inadequate ventilation					
☐ Improper position/posture for task	☐ Inadequate warning system					
☐Operating at improper speed	Lack of tools, equipment or materials					
☐Using defective equipment	Poor housekeeping					
☐Using equipment improperly	⊠Presence of harmful materials					
⊠Other action (Specify)	Radiation exposure					
None on this occasion, but implies that there was possibly a failure to	Uneven ground/terrain					
identify hazard at a previous time.	Weather or environmental conditions					
	Other condition (Specify)					
Immediate/Direct Causes (Required)						
Of the above checked immediate/direct causes provide details a	as to which one was the leading cause of the incident.					
	laterials Assessment identified the hazards before the work was					
to identify hazard/risk".	(for ACM & lead paint), it could be said that there was a "Failure					
G. Basic/Root Causes (Required) (Check all that apply)						
Personal Factors	Job Factors					
☐Emotional stress	☐ Abuse or misuse of equipment					
Fatigue	☐ Inadequate engineering or design					
☐Lack of knowledge and/or skill	☐ Inadequate hazard assessment					
Physical stress or capability	☐ Inadequate personnel to complete task					
Rushing or inattention	Inadequate tools/equipment/materials					
⊠Other (Specify)	☐Inadequate training and/or familiarization					
This "incident" was merely the discovery of 2 hazardous	Inadequate work standard/procedure					
materials in a routine Hazardous Materials Assessment where	Lack of enforcement of procedure or supervision					
we had not expected to find any.	Standards/procedures not developed					
	Wear and tear					
	Other (Specify)					
	A Routine Risk Assessment revealed the presence of					
	11					
	previously unknown hazardous materials in the area where the contractors were scheduled to work.					



Basic/Root Causes	(Real	uired)
-------------------	-------	--------

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

The "incident" per se, was the identification of several hazardous materials (ACM gasket remnants & lead paint).

The existence of the the hazardous materials debris (in an areas where we had not expected to encounter the hazardous materials) is the incident in itself. The materials were discovered in a pre-work assessment, and this is the first incident of asbestos gasket material discovery, and the identification of the lead paint hazard.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Ross McKenzie	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #

I. Property / Equipment Damage (As Required)

Nature and extent of property damage	Estimated Cost (\$)
N/A	0

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Identifying the hazardous materials prior to commencing a job that involves the presence of hazardous materials (such as ACM & lead paint) is the next best thing to identifying them all, and remove them, and moreover, and perhaps the most useful information to be gained from this IIR is to alert crews that ACM gaskets & lead paint are potential hazards to be encountered on the ship.

The debris & the lead paint were found below a Waste Oil Tank that had possibly never been removed since it was installed 49 years ago.

Corrective action responsibility assigned to	Date to be completed (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)	
Ross McKenzie	2018-01-11	2018-01-11	

K. Investigation Completed By (Required)

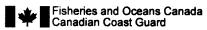
Name of person investigating	Telephone	# Sign	Signature		
Ross McKenzie	250-882-12	273 Ros	ss McKenzie	Digitally signed by Ross McKenzie ON: cn-Ross McKenzie, or-Canadan Coast Guard, our-CCGS Bardet, enai-tearfect-berliggment com, or-CA Date: 2018.01.20 10 45 05 -08/07	
Title Chief Engineer		Date (YYYY-MM-	-DD) 201	8-01-20	

Email address | BartlettCE@ccgs-ngcc.gc.ca

Investigators comments

The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.





L. Workplace OHS Committee / Health and Safety Representative Participation (Required)						
Workplace OHS Committee Member / Health and Saf	ety Representative Info	mation	**************************************			
Name	Telephone # Signature					
Ryan Moore	250-882-1273 Ryan N. Moore Open Note to the Moore Open Note of the M					
Title	Email address		Date (YYYY-MM-DD)			
Senior Engineer	BartlettSE@ccgs-ngcc.	jc.ca	2018-01-20			
Workplace OHS Committee Member/Health and Safe	ety Representative com	nents				
Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.						
M. Commanding Officer or Superintendent/Manag	er (Required)					
Name of Commanding Officer / Responsible Manage	Telephone #	Signature				
Michael McCullagh	250-882-3864	Michael McCullagh	Digitally signed by Michael McCullagh, or-Canadian Coast Guard Fleet, DN: cn=Michael McCullagh, or-Canadian Coast Guard Fleet, ou=COSS Bartlett, email-BartlettCD@bar.cogs-rigoc.gc.ca, c=CA Date: 2018.02.02 10:15 27 -08007			
Title	Email address		Date (YYYY-MM-DD)			
Commanding Officer	BartlettCO@ccgs-n	gcc.gc.ca	2018-02-02			
Has the relevant task(s) on the Site Specific Risk Register	been reviewed and/or mo	dified as a result of the incide	nt? ⊠Yes ⊡No			
Additional comments to include additions, deletions of	r changes to corrective	action recommendations fro	om Section "J"			
Concur with intent of IRR						

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in <u>Information about programs and information holdings</u>: <u>Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908</u>

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the <u>Privacy Act</u> and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: <u>DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca</u>.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: March 1, 2018 12:44 PM **To:** CCGS-NGCC, Bartlett Logistics Officer

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC,

Bartlett Chief Officer

Subject: Re: Recent ACM IIR History

Attachments: Wheelhouse Console Dust Sampling.pdf; Wheelhouse Console ACM - Wiring

Insulation.pdf; Laundry Room Bulkead.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.5 01.03.2018.pdf

Importance: High

Cam,

Here's my list of recent ACM IIRs (Asbestos Containing Materials). I do not have any record of them being sent ashore.

- 1. Wheelhouse Console Dust Sampling 2018-01-12
- 2. Wheelhouse Console ACM Wiring Insulation 2018-01-28
- 3. Laundry Room Bulkhead 2018-01-28
- 4. IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018. But please note that this was a WC IIR signed by Captain McCullagh, and that I have revised wording as document:.......
- 4b. IIR Eng.Room ACM Debris and Lead Paint Ver.5 09.01.2018 And Captain M.Shuckburgh may or may not need to or want to sign this depending on whether it has been submitted ashore.

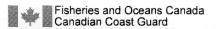
Thanks,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



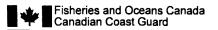
						V.18
NOTE: If this incident falls under the definition of a Report of a Ma	f a reportable Marine Occurre trine Occurrence form shall b				Regulations, S	ection 3(1),
A. Type of Incident (Required) (Choose	e only one)					
Disabling Injury (visit to medical profes	ssional, time lost)	Loss of Consciou	isness due to	electric sh	nock or toxic a	atmosphere
☐ First Aid		Near Miss				
☐ Minor Injury (visit to medical professio	nal, no time lost)	Pollution				
☐ Activation of an Emergency Procedure		Property Damage	9			
☐ Fire or Explosion (Shore only)		Unsatisfactory Co	ondition			
Other (specify)						
B. General Information (Required)						
Employer's (Department) Name		Site/Vessel Na	me (and officia	ıl number)	
Canadian Coast Guard		CCGS Bartlett				
Date of Report (YYYY-MM-DD) 2018-02-12	Mailing Address	25 Huron Street	, Victoria BC \	/8V 4V9		
Name of Responsible Supervisor Captair	Mike McCullagh	Supervisor's Te	lephone # 25	0.213.368	35	
Organization (Select One)						
☐ National HQ ☐ Coast Guard	College 🔀 Region	(if selected, choo	ose Directorate	and Pro	gram/Branch	below)
Regional Directorate (Select One)						
☐ AC's Office ⊠ Fleet ☐ IBMS	□ ITS	☐ Incident Mar	nagement	☐ Nav	vigational Pro	grams
Program/Branch (Select One)						
☐ AtoN	☐ MarSup		☐ Refit	and Main	ntenance	
Canso	☐ MCI		ROC			
☐ CGSS	☐ MCTS		☐ SAR			
	☐ ME		☐ Scier	псе		
☐ EFM (C&P)	⊠ MNS		☐ Vess	els of Cor	ncern	
☐ ER	☐ MSET		☐ Othe	r -		
☐ Ice	Ops Business			L		
☐ ILS						
C. Employee Data (As Required) * (to be employee's supervisor or their designate.			ns an injury).	* To be co	ompleted by the	ne injured
Surname	Siven Name		Initial(s)		Age	
Gender Job T	Title		Years of expe	erience in	current	
Employment Status						
☐ Indeterminate ☐ Term ☐ Other (Specify)	Casual/Relief	Program Clie	nt	nt	☐ Contra	ctor

INCIDENT INVESTIGATION REPORT (IIR)



-1	Fisheries and Oceans Canada Canadian Coast Guard	
Ŧ	Canadian Coast Guard	

	D. Incident Information (Required)					
)	Did this involve a motor vehicle* accident?		es, please ensure the ensure the please ensure the please ensure the please ensure t	ne Motor Vehicle Accide	nt (MVA) Report is	
	Did this involve Helicopter Operations? Yes ☐ No ☒ Did this incident involve Small Craft Operations? Yes ☐ No ☐					
	Location of Incident (include geographica	I name of body of wa	ter, waterway, harbo	our, latitude, longitude if	applicable)	
	Juan de Fuca Strait - WCVI Transiting No	orth				
	Date of Incident (YYYY-MM-DD) 2018-01-	-31	Time of Incident (Local) 15:39		
	Body part injured (if applicable)					
	☐ Abdomen ☐ Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin	
	☐ Arm ☐ Body System / In	ternal 🗌 Foot	☐ Head	☐ Leg	Shoulder	
	Auditory Chest	☐ Hand	☐ Hip	☐ Multiple injuries	Unknown	
	Nature of injury (if known)	-				
	☐ Burns		☐ Multiple Injurie	S		
	☐ Fractures		☐ Traumatic join	t/ligament and muscle/te	ndon injury	
	☐ Injury to Nerves and Spinal Cord		☐ Wounds, Lace	rations and Amputations	;	
	☐ Intracranial Injury		Unknown			
	E. Investigation Information (Required))				
	Type of Event					
	Caught in or between	☐ Exposure to a tra	aumatic event	Slips, trips and fa	alls	
	Contact with harmful substance	☐ Mechanical/Equi	pment Failure	Struck by or agai	nst	
N	Exposure to Electricity			Vehicle incident		
	Exposure to Fire	☐ Overexertion		Other (specify)		
	Exposure to heat/cold	Repetitive Motio	n			
	Exposure to noise			Unknown dust ident Asbestos	tified as containing	
	Description of Incident - Sequence of Eve parts relevant to the investigation or photo		sheets, chart(let)s,	diagrams, location of an	y failed or damaged	
	January 31, 2018 - 1539 Results received from dust samples taken during Wheelhouse Console ACM Wiring Insulation IIR. Test results from the consoles fell in the high range compared with expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (iATL). In consultation with the RD Fleet, the vessel turned around and returned to Victoria and was secured @ 2350. Additionally results from dust samples taken in the Laundry Room after the cracked ACM bulkhead IIR clean-up fell in the moderate range compared with "experience standards". February 1, 2018 - 0800 Northwest Environmental Group Limited (NWE) and Canadian HAZ-MAT were contacted to attend the vessel to develop a sampling/testing and remediation plan. NWE provided third party oversight of the remediation work and performed the visual and air clearance inspection and documentation. Bulk samples taken from wiring in MCR console due to similar morphology wiring which tested positive in the Wheelhouse. Sample results returned positive for 30% Chrysotile asbestos. Roll of packing in MCR STBD stores tested positive for 30% Chrysotile asbestos.					
	February 2, 2018 - 1000 NWE on-board to implement Background Asbestos Testing. Background testing was conducted to look for evidence of the spread of asbestos contamination. The test consists of surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether the fibres have been rendered airborne. 1630 the first set of results for the low volume air sampling were received and verbally conveyed by NWE, the results were below the level of detection 0.01f/ml. 1900 sample results conveyed by NWE from the longer running high volume pumps were also below the level of detection 0.01f/ml. NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stbd Stores.					



February 3, 2018 - NWE returned to perform long duration (10 hours) sampling in the same locations. The sample volume must be greater than 1425 liters to qualify the results to a prove the air meets the Air Clearance/Permissible Exposure Limit for continuous occupation of 0.01f/ml. Results received and some samples were above the limit of detection but below the limit of quantitation. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorksafeBC exposure limits"

Dust samples to couriered by NWE to iATL February 5, 2018 with quick turn around time of samples of 6 hours ordered. Hold up clearing customs at the border required re-sampling on Feb 8, 2018.

February 4, 2018 - Canadian Haz-mat began work cleaning Wheelhouse consoles with oversight provided by NWE.

February 5, 2018 - Canadian Haz-mat finished work in the Wheelhouse and started and finished work in the Laundry Room. Both spaces passed visual inspection by NWE.

February 6, 2018 - Canadian Haz-mat on-board removing thermocouple extension wire from ER and MCR console. MCR console cleaning started and completed. All unidentifiable packing disposed of through Canadian Hazmat. Stbd MCR cleaning started and completed. NWE air clearance samples from Wheelhouse and Laundry Room passed.

February 7, 2018 - Canadian Haz-mat on-board setup and performing cleaning in Bridge Void Space. Stbd MCR, ER, and MCR passed visuals inspection by NWE. NWE air clearance sampling from MCR and Stbd MCR taken and passed.

February 8, 2018 - Canadian Haz-mat onboard completed cleaning in Bridge Void Space. Space passed visual inspection by NWE. NWE air clearance sample from Bridge Void Space passed. Dust wipe samples retook in ER, MCR, and HVAC as the initial samples were still held up at customs.

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE:"We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits.".

Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals. The area was wet wiped after the sample taken. MCR passed air and visual clearance by NWE. As per NWE recommendation, console top was HEPA vacuumed. One sample taken from ER in an inaccessible place returned "elevated". Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: "Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer." Follow up sampling to be conducted upon return to Victoria. Defect entered.

- -iATL dust wipe samples results
- -NWE air sample test results alongside
- -NWE Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments
- -NWE Asbestos Air and Visual Clearance Documents for effected spaces
- -NWE air sample test results while underway at sea conditions

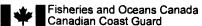
Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?	⊠Yes	□No
Specify		
A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulation of Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. Vo console, MCR Stbd Stores and Laundry Room access was restricted upon receiving the results on asbestos-conmaterials found.	id space,	- 1
Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?	□Ves	⊠No



	and a
F. Immediate/Direct Causes (Required) (Check all that ap	рріу)
Substandard Actions	Substandard Conditions
Bypassing safety devices	☐Congested or restricted area
Failure to check or monitor	☐Defective tools, equipment or materials
Failure to communicate/coordinate	☐ Excessive noise
☐Failure to follow procedure/policy	☐Heat/cold exposure
⊠Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE
Failure to react/correct	☐ Inadequate communication
Failure to service equipment properly	☐Inadequate guards or barriers
Failure to use PPE	☐Inadequate information/data
Failure to warn or secure	☐Inadequate instruction/procedure
☐Horseplay	☐Inadequate preparation/planning
☐Improper lifting	☐Inadequate support/assistance
☐Improper loading, placing, mixing	☐Inadequate ventilation
☐Improper position/posture for task	☐Inadequate warning system
Operating at improper speed	Lack of tools, equipment or materials
☐Using defective equipment	Poor housekeeping
Using equipment improperly	⊠Presence of harmful materials
Other action (Specify)	Radiation exposure
	────│
	☐Weather or environmental conditions
	Other condition (Specify)
Immediate/Direct Causes (Required)	
Of the above checked immediate/direct causes provide det	tails as to which one was the leading cause of the incident.
	tional wires of the same morphology as the ACM wires on the bridge ne dust is from pulling asbestos containing cabling throughout the

	Fisheries and Oceans Canada	
#	Fisheries and Oceans Canada Canadian Coast Guard	

G. Basic/Root Causes (Required) (Che	ck all that apply	')					
Personal Factors			Job Factors	· · · · · · · · · · · · · · · · · · ·			
Emotional stress			Abuse or misuse of equip				
Fatigue			Inadequate engineering of	•			
Lack of knowledge and/or skill		⊠Inadequate hazard asses					
Physical stress or capability			Inadequate personnel to	•			
Rushing or inattention		Inadequate tools/equipme					
Other (Specify)	☐Inadequate training and/o		tion				
□ Inadequate work standa					i-i		
	Lack of enforcement of pr		supervision				
	☐Standards/procedures no ☐Wear and tear	t developed					
☐ Other (Specify)							
Basic/Root Causes (Required)							
Of the above checked Basic/Root cause	s provide details	s as to w	hich one was the leading cau	se of the inc	cident.		
incomplete identification and abatement	of asbestos on-	board. [Depth and scope of previous	Asbestos Si	urveys did not identify		
the wiring in these consoles.							
H. Witnesses (As Required) (NOTE: Wit information)	ness statements r	may be re	equired depending on the severit	y of the incide	ent – Attach all additional		
Name of Witness # 1	Telephone #		Name of Witness # 3		Telephone #		
Matthew Jackson CE	250-882-1273		Steve Buss SE		250-213-3685		
Name of Witness # 2	Telephone #		Name of Witness # 4		Telephone #		
Mike McCullagh CO	250-882-3864						
I. Property / Equipment Damage (As R	dequired)				•		
Nature and extent of property damage					Estimated Cost (\$)		
J. Corrective & Preventative Measures recurrence)	s (Required) (De	escribe o	corrective measures taken ar	id/or recomn	nended to prevent		
Future Asbestos Management Surveys	to include on-bo	ard air s	ampling and dust wipe samp	les.			
As per NWE recommendation future wo							
asbestos work due difficultly of removing wiring and bronze braid on the electrica		the wirir	ng, terminal strips, circuit boa	rds/compon	ents, cloth wrap on		
Work outside of normally accessed spa		nav enco	ounter the possibility of asbes	stos debris a	nd be considered in		
the risk assessment prior to starting wo	rk.	_					
Vessel Specific Asbestos Management							
Upon return to Victoria additional dust s Training arranged for 5 crew members t					iations.		
Corrective action responsibility assigned		1	be completed (YYYY-MM-DD)		Date (YYYY-MM-DD)		
Chief Engineer/Marine Engineering							
Chian Engineering		<u> </u>		L.			

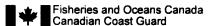


K. Investigation Completed By (Required)							
Name of person investigating	Telephone	#	Signature				
Matthew Jackson	250-882-1	273	Matt Jackson		Digitally signed by Natt Jackson DN cn=Matt Jackson, p=Coast Guard, ou=Coast Guard, email=BartletfCE@cccps-ngcc.g.c.a, c=CA Date 2018.02.13 Dat37 47 -08000		
Title Chief Engineer		Date (YYYY	-MM-DD)	13/2/20)17		
Email address BartlettCE@ccgs-ngcc.gc.ca							
Investigators comments			_				
Depending on the anticipated service life of the Bard developed. Future Asbestos Management Surveys to include re Bulk sampling frequency and scope to be increased At sea air sampling plan was developed with NWE, to operational status.	egular air and I to further id	d dust samplii entify/clear ai	ng. reas on-board of AC	М.	·		
L. Workplace OHS Committee / Health and Safety		-					
Workplace OHS Committee Member / Health and Sa	1						
Name	Telephone		Signature	Digi	Digitally signed by Steve Buss		
Steve Buss	250-213-36	585 	Steve Buss	DN: ema Date	cri=Steve Buss, o=Canadian Coast Guard, ou=DFO, ai=BartlettSE@copo-ngoc.gc.ca, c=CA a: 2018.02.13.08.45.05-08'00"		
Title	Email addr	ess			Date (YYYY-MM-DD)		
Senior Engineer	BartlettSE(@ccgs-ngcc.g	c.ca		2018-02-13		
Workplace OHS Committee Member/Health and Sa	fety Represe	entative comn	nents				
developed for future testing to ensure the health and M. Commanding Officer or Superintendent/Management			ers in the future.				
Name of Commanding Officer / Responsible Manag	- i	Telephone # Signature					
Michael McCullagh	250-88			ullagh	Deptailly signed by Michael McCullagh DN on-Michael McCullagh, or-Canadian Coest Guard Fleet, our-CCGS Berlief, email-BanderCCQBbs roge-ripoogc.cs, c=CA Date; 2018.02.13.09.1539007		
Title	Email a	address			Date (YYYY-MM-DD)		
Commanding Officer	Bartlet	:CO@ccgs-ng	jcc.gc.ca		2018-02-13		
Has the relevant task(s) on the Site Specific Risk Registe	er been review	ved and/or mo	dified as a result of th	e incider	nt? XYes No		
Additional comments to include additions, deletions	or changes	to corrective a	action recommendat	ions fro	m Section "J"		
Concur with corrective and preventative measures a containing work spaces.	adopted, and	the heighten	ed awareness and v	vigilance	with regard to ACM		

Privacy Notice

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the Canada Labour Code for the purpose of documenting hazardous occurrences.



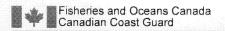
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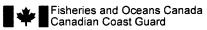


INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the care a Rep		reportable Marine Od ne Occurrence form s						julations.	Section 3(1)
A. Type of Incident (Required)	(Choose o	only one)							
☐ Disabling Injury (visit to medic	al profess	ional, time lost)	Los	s of Conscio	usness due t	o electr	ic shock	c or toxic	atmosphe
☐ First Aid	r Miss								
☐ Minor Injury (visit to medical p	rofessiona	al, no time lost)	☐ Poll	ution					
☐ Activation of an Emergency P	rocedure		☐ Pro	perty Damag	е				
☐ Fire or Explosion (Shore only)			⊠ Uns	atisfactory C	ondition				
Other (specify)									
B. General Information (Requir	ed)								
Employer's (Department) Name			Si	te/Vessel Na	me (and offi	cial nun	nber)		
Canadian Coast Guard			C	CGS Bartlett					
Date of Report (YYYY-MM-DD) 2018	3-01-28	Mailing Addres	s 25	Huron Stree	t Victoria BC	V8V 4\	/ 9		
Name of Responsible Supervisor Matthew Jackson Supervisor's Telephone # 250-882-1273									
Organization (Select One)									
☐ National HQ ☐ Coas	t Guard C	ollege 🔀 Reg	gion (if s	selected, cho	ose Director	ate and	Progra	m/Branc	h below)
Regional Directorate (Select One)								
☐ AC's Office ⊠ Fleet [BMS	□ITS	П	Incident Ma	nagement		Naviga	itional P	rograms
Program/Branch (Select One)									
☐ AtoN		☐ MarSup					Mainten	ance	
Canso		☐ MCI			ROC				
☐ CGSS		☐ MCTS		☐ SAR					
☐ E&I		☐ ME		☐ Science					
☐ EFM (C&P)		□MNS			☐ Ve	ssels o	f Conce	rn	
☐ ER		☐ MSET			☐ Ot	her			
☐ Ice		Ops Business	5			-			
☐ ILS MARTINE THE THE STATE OF									
C. Employee Data (As Require employee's supervisor or their de					iins an injury). * To l	oe comp	oleted by	the injure
Surname	Gi	ven Name			Initial(s)		A	ge	
Gender	Job Tit	le			Years of ex	nerienc	e in cur	rent	
☐Female ☐Male					position	.pull5110	iii Gul		
Employment Status									
☐Indeterminate ☐Term		☐Casual/Relief		Program Clie	ent []Stu	dent		☐ Cont	ractor
Other (Specify)									

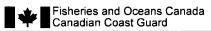




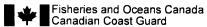
D. Incident Information (Required)								
	es, please ensure the <u>Motor Vehicle Accident</u> (MVA) Report is pleted.							
Did this involve Helicopter Operations? Yes ☐ No ☒ Did to	this incident involve Small Craft Operations? Yes ☐ No ⊠							
Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)								
Alongside Victoria Coast Guard Base Refit Period								
Date of Incident (YYYY-MM-DD) 2018-01-24	Time of Incident (Local)							
Body part injured (if applicable)								
☐ Abdomen ☐ Back ☐ Eye	☐ Neck ☐ Knee ☐ Pelvis / Groin							
Arm Body System / Internal Foot	☐ Head ☐ Leg ☐ Shoulder							
Auditory Chest Hand	☐ Hip ☐ Multiple injuries ☐ Unknown							
Nature of injury (if known)								
Burns	☐ Multiple Injuries							
☐ Fractures	☐ Traumatic joint/ligament and muscle/tendon injury							
☐ Injury to Nerves and Spinal Cord	☐ Wounds, Lacerations and Amputations							
☐ Intracranial Injury	Unknown							
E. Investigation Information (Required)								
Type of Event								
☐ Caught in or between ☐ Exposure to a tra	aumatic event Slips, trips and falls							
☐ Contact with harmful substance ☐ Mechanical/Equi	pment Failure							
Exposure to Electricity Mechanism of ha	rm unknown							
Exposure to Fire Overexertion	Other (specify)							
Exposure to heat/cold Repetitive Motion	_ :: :: :: :: :: :: :: :: :: :: :: :: ::							
Exposure to noise								
Description of Incident - Sequence of Events (attach additional parts relevant to the investigation or photos as required)	sheets, chart(let)s, diagrams, location of any failed or damaged							
the greatest concern in the shedding asbestos fibers. Visual inshows wire wrap in good overall condition. Samples couriered hour turnaround) requested on test results. Results expected J See attached photo of the wiring taken during dust sampling.	even samples wire samples returned positive for Chrysotile wrap (jacket) tested negative. See attached pdf of test results. It access to location and consider any dust inside the console to lust samples from the two consoles. Discussing the wire Environmental, the negative result of asbestos in the wire wrap fing wire wraps which contain asbestos due to vibration would be spection of asbestos-containing wiring during dust sampling to a laboratory in New Jersey for analysis with a rush order (6-lanuary 30, 2018.							
Was a Risk Assessment performed prior to commencement of the	he task which resulted in the incident?							
Specify								

-1	Fisheries Canadian	and	Oceans	Canada
Ŧ	Canadian	Coa	ast Guar	d

Was accident prevention training provided in relation to the dut	ies of the injured employee prior to the incident?					
Specify						
F. Immediate/Direct Causes (Required) (Check all that apply)					
Substandard Actions	Substandard Conditions					
Bypassing safety devices	Congested or restricted area					
Failure to check or monitor	Defective tools, equipment or materials					
Failure to communicate/coordinate	☐ Excessive noise					
Failure to follow procedure/policy	☐ Heat/cold exposure					
☐ Failure to identify hazard/risk ☐ Inadequate/improper PPE or use of PPE						
Failure to react/correct	☐Inadequate communication					
Failure to service equipment properly	☐Inadequate guards or barriers					
☐ Failure to use PPE ☐ Inadequate information/data						
☐Failure to warn or secure ☐Inadequate instruction/procedure						
Horseplay	☐Inadequate preparation/planning					
Improper lifting	☐Inadequate support/assistance					
Improper loading, placing, mixing	☐ Inadequate ventilation					
Improper position/posture for task	☐Inadequate warning system					
Operating at improper speed	Lack of tools, equipment or materials					
Using defective equipment	☐Poor housekeeping					
Using equipment improperly	⊠Presence of harmful materials					
Other action (Specify)	Radiation exposure					
	Uneven ground/terrain					
	☐ Weather or environmental conditions					
	☐Other condition (Specify)					
Immediate/Direct Causes (Required)						
Of the above checked immediate/direct causes provide details	s as to which one was the leading cause of the incident.					
Use of wiring containing asbestos insulation during vessel corwiring in this console, other wires are rubber insulated with a was not identified in the Asbestos Management Plan.	nstruction. The asbestos insulated wire makes up part of the cloth wrap or PVC insulated. The wiring in the Bridge consoles					



G. Basic/Root Causes (Required) (Check all that apply)						
Personal Factors			Job Factors			
Emotional stress			☐Abuse or misuse of equipment			
Fatigue			Inadequate engineering o	_		
Lack of knowledge and/or skill			Inadequate hazard asses			
Physical stress or capability			Inadequate personnel to	•		
Rushing or inattention			☐ Inadequate tools/equipme			
Other (Specify)			☐ Inadequate training and/o		lion	
			☐Inadequate work standard ☐Lack of enforcement of pr	-	unon/ioion	
			Standards/procedures no		supervision	
			☐ Standards/procedures no ☐ Wear and tear	t developed		
			Other (Specify)			
Incomplete identification and abatement of hazardous materials onboard						
Pagic/Poot Courses (Poguired)						
Basic/Root Causes (Required) Of the above checked Basic/Root cause						
Electrical insulation on wires installed ou Surveys. Asbestos-containing wiring co- rubber jacketed bronze armored cables.	nnects via termir	nal strips	s to rubber insulated cloth wra	apped wires	which are part of	
H. Witnesses (As Required) (NOTE: Wit	tness statements n	nay be re	equired depending on the severit	y of the incide	ent – Attach all additional	
Name of Witness # 1	Telephone #		Name of Witness # 3		Telephone #	
Matthew Jackson C/E	250-882-1273					
Name of Witness # 2	Telephone #		Name of Witness # 4		Telephone #	
Steve Buss S/E	250-882-1273					
I. Property / Equipment Damage (As R	lequired)					
Nature and extent of property damage					Estimated Cost (\$)	
J. Corrective & Preventative Measures recurrence)	s (Required) (De	escribe o	corrective measures taken an	id/or recomn	nended to prevent	
Currently awaiting test results of dust from Plan for abatement of dust and wiring to Extensive work on the bridge consoles with the property of the property	be determined			January 30,	2018.	
Corrective action responsibility assigned	d to	Date to	be completed (YYYY-MM-DD)	Follow-up [Date (YYYY-MM-DD)	
Chief Engineer/Vessel Maintenance Ma	ınager	ASAP				

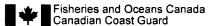


K. Investigation Completed By (Required)					
Name of person investigating	Telephone		Signature		
Matthew Jackson	250-882-12	273	Matt Jackson		ptally signed by Mart Jackson or: Mart Jackson, o-Coast Guard our-Coast Guard air-BarterCeEgocys-ngo: gc.ca crCA te: 2018.01.27 10.52.32-08.00
Title Chief Engineer		Date (YYYY-I	MM-DD)	2018-0)1-27
Email address BartlettCE@ccgs-ngcc.gc.ca		evilen.			
Investigators comments					
Surprising positive test result for asbestos in an application this mineral. Wire and wire wrap (jacket) look to be in decision on course of action.					
Workplace OHS Committee / Health and Safety I	Represent	ative Participa	ation (Required)		
Norkplace OHS Committee Member / Health and Safe	ety Repres	entative Inform	nation		
Name	Telephone		Signature	Dec	stally signed by Chris Couch
Chris Couch	250.213.36	85	Chris Couch	DN-	cm=Dris Couch (= Canadian Coast Guard (ou=CCGS Ban al=GartletCHOgcogs-ngcc.gc.ca c=CA ta 2018.01.28 10.04 56-08.00
Title	Email addr	ess			Date (YYYY-MM-DD)
Chief Officer	BartlettCHO	O@ccgs-ngcc.	gc.ca		2018-01-28
Workplace OHS Committee Member/Health and Safe	ty Represe	ntative comm	ents		
of asbestos containing materials (ACM). We will also Concur with this report, and nothing further to add.	Teview the	Silly's Aspest	os Management Pi	ari (Alvi	-).
M. Commanding Officer or Superintendent/Manage	er (Require	ed)			
	Teleph	one #	Signature		
Name of Commanding Officer / Responsible Manage			I I har to the A	Ullagh Digitally signed by Michael McCullagh DN on=Michael McCullagh o≕Canadian Coast € ou=CGS Sathette mail=BartlettCO@bar cogs-r	
	250-88	2-3864	Michael McC	ullagii	ON con-Michael McCullagh, or-Canadian Coast Guard Fle ou=CCGS Bartlett, email=BartlettCO@bar.ccgs-ngcc.gc.cl Date 2018.01.28 10.09.41 -08'00'
Michael McCullagh		2-3864 iddress	Michael McC	unagn	DN en-widerset McCillagh, ex-Canadran Coast Guard Fla overCGS Bartist envall-BartistCO@bar cogninges go Date 2018.01.29 to 09.41 -09.00 Date (YYYY-MM-DD)
Michael McCullagh Title	Email a				
Michael McCullagh Title Commanding Officer	Email a	ddress CO@ccgs-ngo	cc.gc.ca		Date (YYYY-MM-DD) 2018-01-28
Name of Commanding Officer / Responsible Manage Michael McCullagh Title Commanding Officer Has the relevant task(s) on the Site Specific Risk Register Additional comments to include additions, deletions of	Email a Bartlett	ddress CO@ccgs-ngo ed and/or mod	cc.gc.ca ified as a result of the	e incide	Date (YYYY-MM-DD) 2018-01-28 nt?

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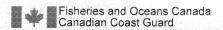
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INCIDENT INVESTIGATION REPORT (IIR)

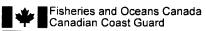
9.B.1

		rences as per <u>Transportation Safety Board (TSB) Regulations</u> , Section 3(1), be completed within 30 days of the occurrence.
A. Type of Incident (Required) (Cho	ose only one)	
☐ Disabling Injury (visit to medical pro	ofessional, time lost)	Loss of Consciousness due to electric shock or toxic atmosphere
First Aid		Near Miss
☐ Minor Injury (visit to medical profes	sional, no time lost)	Pollution
Activation of an Emergency Proceed	lure 🔲	Property Damage
Fire or Explosion (Shore only)		Unsatisfactory Condition
Other (specify)		
B. General Information (Required)		
Employer's (Department) Name		Site/Vessel Name (and official number)
Coast Guard Fleet		CCGS Bartlett
Date of Report (YYYY-MM-DD) 2018-01-2	28 Mailing Address	25 Huron Street, Victoria, BC, V8V 4V9
Name of Responsible Supervisor M. N	/lcCullagh	Supervisor's Telephone # 250-882-3864
Organization (Select One)		
☐ National HQ ☐ Coast Gua	ard College 🛮 🖂 Region	n (if selected, choose Directorate and Program/Branch below)
Regional Directorate (Select One)		
	MS 🗌 ITS	☐ Incident Management ☐ Navigational Programs
Program/Branch (Select One)		
☐ AtoN	☐ MarSup	Refit and Maintenance
☐ Canso	□ MCI	ROC
☐ CGSS	☐ MCTS	☐ SAR
□ E&I	☐ ME	☐ Science
☐ EFM (C&P)	⊠ MNS	☐ Vessels of Concern
ER STATE OF THE ST	☐ MSET	☐ Other
☐ Ice	Ops Business	
□ILS		
C. Employee Data (As Required) * (temployee's supervisor or their designation)		e employee sustains an injury). * To be completed by the injured pleted.
Surname	Given Name	Initial(s) Age
Gender Jo	bb Title	Years of experience in current
Female Male		position
Employment Status		
☐Indeterminate ☐Term	Casual/Relief	Program Client Student Contractor
Other (Specify)		고 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그

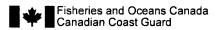


	Fisheries	and O	ceans Canada t Guard	
	Canadian	Coast	t Guard	

Did this involve a motor vehicle* accident? Yes
Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable) Victoria Coast Guard Base
Date of Incident (YYYY-MM-DD) 2018-01-27 Time of Incident (Local) 1345
Date of Incident (YYYY-MM-DD) 2018-01-27 Time of Incident (Local) 1345
Body part injured (if applicable) Abdomen Back Eye Neck Knee Pelvis / Groin Arm Body System / Internal Foot Head Leg Shoulder Auditory Chest Hand Hip Multiple injuries Unknown Nature of injury (if known) Burns Multiple Injuries Fractures Traumatic joint/ligament and muscle/tendon injury Injury to Nerves and Spinal Cord Wounds, Lacerations and Amputations Intracranial Injury Unknown E. Investigation Information (Required) Type of Event Caught in or between Exposure to a traumatic event Slips, trips and falls Contact with harmful substance Mechanical/Equipment Failure Struck by or against Exposure to Electricity Mechanism of harm unknown Vehicle incident Exposure to Fire Overexertion Other (specify) Exposure to heat/cold Repetitive Motion Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
Abdomen Back Eye Neck Knee Pelvis / Groin Arm Body System / Internal Foot Head Leg Shoulder Auditory Chest Hand Hip Multiple injuries Unknown Nature of injury (if known) Burns Multiple Injuries Fractures Traumatic joint/ligament and muscle/tendon injury Injury to Nerves and Spinal Cord Wounds, Lacerations and Amputations Intracranial Injury Unknown E. Investigation Information (Required) Type of Event Supposure to a traumatic event Slips, trips and falls Contact with harmful substance Mechanical/Equipment Failure Struck by or against Exposure to Electricity Mechanism of harm unknown Vehicle incident Exposure to Fire Overexertion Other (specify) Exposure to heat/cold Repetitive Motion Exposure to noise Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
Arm Body System / Internal Foot Head Leg Shoulder Auditory Chest Hand Hip Multiple injuries Unknown Nature of injury (if known) Burns Multiple Injuries Fractures Traumatic joint/ligament and muscle/tendon injury Injury to Nerves and Spinal Cord Wounds, Lacerations and Amputations Intracranial Injury Unknown E. Investigation Information (Required) Type of Event Caught in or between Exposure to a traumatic event Slips, trips and falls Contact with harmful substance Mechanical/Equipment Failure Struck by or against Exposure to Electricity Mechanism of harm unknown Vehicle incident Exposure to Fire Overexertion Other (specify) Exposure to heat/cold Repetitive Motion Exposure to noise Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
Auditory Chest Hand Hip Multiple injuries Unknown Nature of injury (if known) Burns Multiple Injuries Fractures Traumatic joint/ligament and muscle/tendon injury Injury to Nerves and Spinal Cord Wounds, Lacerations and Amputations Intracranial Injury Unknown E. Investigation Information (Required) Type of Event Caught in or between Exposure to a traumatic event Slips, trips and falls Contact with harmful substance Mechanical/Equipment Failure Struck by or against Exposure to Electricity Mechanism of harm unknown Vehicle incident Exposure to Fire Overexertion Other (specify) Exposure to heat/cold Repetitive Motion Exposure to noise Cracked seam in asbestos bulkhead Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
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Burns
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury ☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations ☐ Intracranial Injury ☐ Unknown E. Investigation Information (Required) Type of Event ☐ Caught in or between ☐ Exposure to a traumatic event ☐ Slips, trips and falls ☐ Contact with harmful substance ☐ Mechanical/Equipment Failure ☐ Struck by or against ☐ Exposure to Electricity ☐ Mechanism of harm unknown ☐ Vehicle incident ☐ Exposure to Fire ☐ Overexertion ☐ Other (specify) ☐ Exposure to noise ☐ Cracked seam in asbestos bulkhead ☐ Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
Injury to Nerves and Spinal Cord
□ Intracranial Injury □ Unknown E. Investigation Information (Required) Type of Event □ Caught in or between □ Exposure to a traumatic event □ Slips, trips and falls □ Contact with harmful substance □ Mechanical/Equipment Failure □ Struck by or against □ Exposure to Electricity □ Mechanism of harm unknown □ Vehicle incident □ Exposure to Fire □ Overexertion □ Other (specify) □ Exposure to heat/cold □ Repetitive Motion □ Exposure to noise □ Cracked seam in asbestos bulkhead Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
E. Investigation Information (Required) Type of Event Caught in or between
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Exposure to Electricity Mechanism of harm unknown Vehicle incident Exposure to Fire Overexertion Other (specify) Exposure to heat/cold Repetitive Motion Exposure to noise Cracked seam in asbestos bulkhead Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
□ Exposure to Fire □ Overexertion □ Other (specify) □ Exposure to heat/cold □ Repetitive Motion □ Exposure to noise □ Cracked seam in asbestos bulkhead □ Cracked seam in asbestos bulkhead □ Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) □ Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
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Exposure to heat/cold Repetitive Motion Exposure to noise Cracked seam in asbestos bulkhead Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
parts relevant to the investigation or photos as required) Chief Engineer discovered a crack and two split joining seams in the laundry room asbestos bulkhead lining panels around the aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
aft porthole tube. The cracked and split joining seams expose the asbestos inside these panels. See attached photo of
Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?
Specify
Was accident prevention training provided in relation to the duties of the injured employee prior to the incident?
Specify



F. Immediate/Direct Causes (Required) (Check all that apply)			
Substandard Actions	Substandard Conditions		
☐Bypassing safety devices	Congested or restricted area		
☐Failure to check or monitor	Defective tools, equipment or materials		
☐Failure to communicate/coordinate	Excessive noise		
Failure to follow procedure/policy	☐ Heat/cold exposure		
☐Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE		
☐Failure to react/correct	☐ Inadequate communication		
Failure to service equipment properly	☐Inadequate guards or barriers		
☐Failure to use PPE	☐Inadequate information/data		
Failure to warn or secure	☐Inadequate instruction/procedure		
Horseplay	☐ Inadequate preparation/planning		
☐ Improper lifting	☐ Inadequate support/assistance		
☐Improper loading, placing, mixing	☐ Inadequate ventilation		
☐Improper position/posture for task	☐ Inadequate warning system		
☐Operating at improper speed	Lack of tools, equipment or materials		
☐Using defective equipment	☐ Poor housekeeping		
☐Using equipment improperly	⊠ Presence of harmful materials		
☐ Other action (Specify)	Radiation exposure		
	☐Uneven ground/terrain		
	Other condition (Specify)		
Immediate/Direct Causes (Required)			
Of the above checked immediate/direct causes provide details a	as to which one was the leading cause of the incident.		
Suspected cause or contributing factor: CCGS Bartlett was securing at Victoria Coast Guard Base. Win setting of the starboard stern towards the jetty. Upon arrival the touched a piling that is standing proud of the jetty face. This tou lining panel and joining seams.	starboard stern quarter in way of the laundry room porthole tube		
G. Basic/Root Causes (Required) (Check all that apply)			
Personal Factors	Job Factors		
Emotional stress	Abuse or misuse of equipment		
Fatigue	☐Inadequate engineering or design		
Lack of knowledge and/or skill	☐Inadequate hazard assessment		
Physical stress or capability	☐Inadequate personnel to complete task		
☐Rushing or inattention	☐Inadequate tools/equipment/materials		
Other (Specify)	☐Inadequate training and/or familiarization		
	☐Inadequate work standard/procedure		
L	Lack of enforcement of procedure or supervision		
	Standards/procedures not developed		
	☐Wear and tear		
	◯ Other (Specify)		
	Ship characteristics combined with weather.		



Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

See attached excerpt from "CCGS Bartlett Maneuverability Discussion"

- Large sail area aft resulting in an "unbalanced" design affected by minimal cross-winds.
- The impact of having a significant sail area fully aft in conditions other than the wind directly ahead results in the transfer of the pivot point of the vessel forward thus producing a larger than expected lever effect.

H. Witnesses (As Required)	(NOTE: Witness stater	nents may be required	depending on the severi	ty of the incident	 Attach all 	additional
information)						

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Mike McCullagh CO	250-882-3864	Christopher Couch Ch/O	250-413-2800
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Matthew Jackson CE	250-882-1273	Joseph Van Der Sande 3rd/O	250-413-2800

I. Property / Equipment Damage (As Required)

Nature and extent of property damage

Abatement contractor clean up of possibly asbestos containing debris. Encapsulation of exposed asbestos in bulkhead lining panels.

Estimated Cost (\$)

1,500\$

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

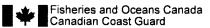
Asbestos: Space secured against entry and signs posted. Abatement contractor to be contacted (on the next business day) to clean up debris and encapsulate the exposed asbestos.

Corrective action responsibility assigned to Date to		to be completed (YYYY-MM-DD) Follow-up Date (YYYY-MM		
Chief Engineer / Marine Engineering	2018-0	2018-01-30		
K. Investigation Completed By (Required)				
Name of person investigating	Telephone	#	Signature	
Matthew Jackson 250-882-1 Title Chief Engineer		273	Matt Jackso	Digitally signed by Matt Jackson ON innt-Matt Jackson on-Coast Guard out-Coast Guard, enail-Berliefocigoge-group cac. eCA Cate 2018.01.28 15 48 18-08.00
		Date (YYYY-MM-DD)		2018-01-28
Email address BartlettCE@ccgs-ngcc.gc.ca				

Investigators comments

Quick action was taken to restrict access to a possibly contaminated space after discovery of the damaged bulkhead lining panels. Plan for clean up and encapsulation in place.





L. Workplace OHS Committee / Health and Safety	Representative Partici	ipation (Required)		
Workplace OHS Committee Member / Health and Sa	fety Representative Info	rmation		
Name	Telephone #	Signature		
Chris Couch	250.423.2800	IIChris Couch	Digitally signed by Ohns Couch DN or#Chins Couch, orCanadian Coast Guard, ou#CCGS Bartlett emails BartlettO+IO@cogs-rigot.gc.ca. o#CA Date: 2018.01.28.16.51.0008′00′	
Title	Email address		Date (YYYY-MM-DD)	
Chief Officer	BartlettCHO@ccgs-ngc	cc.gc.ca	2018-01-28	
Workplace OHS Committee Member/Health and Sar	fety Representative com	ments		
M. Commanding Officer or Superintendent/Manag	ger (Required)			
Name of Commanding Officer / Responsible Manag	er Telephone #	Signature		
Michael McCullagh	250-882-3864	Michael McCullagh	Digitally signed by Michael McCullagh DN crishforhael McCullagh, o-Canadian Coast Guard Fleet, ou=CCGS Bartlett, email=BartlettCO@bar.cogs-rigco go.ca, c=CA Date 2018.01.26 17 25 22 -0800*	
Title	Email address	Email address		
Commanding Officer	BartlettCO@ccgs-ngcc.gc.ca		2018-01-28	
Has the relevant task(s) on the Site Specific Risk Registe	r been reviewed and/or me	odified as a result of the incide	nt? Xes No	
Additional comments to include additions, deletions	or changes to corrective	action recommendations fro	m Section "J"	

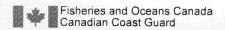
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Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

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INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

		rences as per <u>Transportation Safety Board (TSE</u> be completed within 30 days of the occurrence.	3) Regulations, Section 3(1),		
A. Type of Incident (Required) (Ch	noose only one)				
Disabling Injury (visit to medical p	professional, time lost)	Loss of Consciousness due to electric s	hock or toxic atmosphere		
First Aid		Near Miss			
☐ Minor Injury (visit to medical profe	essional, no time lost)	Pollution			
☐ Activation of an Emergency Proce	edure	Property Damage			
Fire or Explosion (Shore only)		Unsatisfactory Condition			
Other (specify)		### 150 A 15			
B. General Information (Required)					
Employer's (Department) Name		Site/Vessel Name (and official numbe	r)		
Canadian Coast Guard		CCGS Bartlett			
Date of Report (YYYY-MM-DD)	Mailing Address	25 Huron Street, Victoria, BC, V8V 4V	9		
Name of Responsible Supervisor Ross McKenzie Supervisor		Supervisor's Telephone # 250-882-12	73		
Organization (Select One)		and Million			
☐ National HQ ☐ Coast G	uard College 🛮 🔀 Region	(if selected, choose Directorate and Pro	ogram/Branch below)		
Regional Directorate (Select One)					
	BMS ITS	☐ Incident Management ☐ Na	ivigational Programs		
Program/Branch (Select One)					
AtoN	☐ MarSup	⊠ Refit and Mai			
Canso	☐ MCI	ROC			
☐ CGSS	☐ MCTS	☐ SAR	SAR		
☐ E&I	☐ ME	☐ Science	☐ Science		
☐ EFM (C&P)	☐ MNS	☐ Vessels of Co	☐ Vessels of Concern		
☐ ER	☐ MSET	Other			
☐ Ice	Ops Business				
☐ ILS					
C. Employee Data (As Required) * employee's supervisor or their design		e employee sustains an injury). * To be o pleted.	completed by the injured		
Surname	Given Name	Initial(s)	Age		
Gender	Job Title	Vegra of experience in	- Loursont		
Female Male		position	Years of experience in current position		
Employment Status					
☐Indeterminate ☐Term	Casual/Relief	□ Program Client □ Student	☐ Contractor		
Other (Specify)					

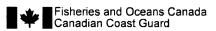


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D. Incident Information (Required)						
Did this involve a motor vehicle* accident? Yes No						
Did this involve Helicopter Operations? Ye	es 🗌 No 🔀 Did th	nis incident involve Sn	nall Craft Operations?	Yes ☐ No ⊠		
Location of Incident (include geographical na	me of body of wate	r, waterway, harbour,	latitude, longitude if a	applicable)		
Engine Room, CCGS Bartlett, Victoria Coast	Guard Base, Victor	ria harbour				
Date of Incident (YYYY-MM-DD) 2018.01.08		Time of Incident (Loc	al) 0950 hou	ırs		
Body part injured (if applicable)						
☐ Abdomen ☐ Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin		
☐ Arm ☐ Body System / Intern	al 🗌 Foot	☐ Head	Leg	☐ Shoulder		
☐ Auditory ☐ Chest	☐ Hand	Hip	Multiple injuries	Unknown		
Nature of injury (if known)				· · · · · · · · ·		
Burns		Multiple Injuries				
☐ Fractures		☐ Traumatic joint/lig	ament and muscle/te	ndon injury		
☐ Injury to Nerves and Spinal Cord			ons and Amputations	1		
☐ Intracranial Injury	☐ Intracranial Injury ☐ Unknown					
E. Investigation Information (Required)						
Type of Event						
Caught in or between	Exposure to a trau	umatic event	Slips, trips and fa	ills		
Contact with harmful substance	Mechanical/Equip	ment Failure	Struck by or agai	nst		
Exposure to Electricity	Mechanism of har	m unknown	☐ Vehicle incident			
Exposure to Fire	Overexertion		Other (specify)			
Exposure to heat/cold	Repetitive Motion					
Exposure to noise			Hazardous material	spill		
Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)						
The Bartlett was informed by our Asbestos co Material Assessment prior to replacing the bu clear of and not disturb the pile of debris cont the tank, and to isolate that area of the engine Contractor removed the ACM & Lead Paint ha	lkhead insulation b aining asbestos (ole eroom - and to have	ehind the Engineroom d gasket material), an e suitable qualified pro	n Dirty Oil Tank. We to the lead paint used ofessionals remove the	were advised to stay on the base below ne hazards as ASAP.		
Was a Risk Assessment performed prior to co	mmencement of the	e task which resulted	in the incident?	⊠Yes □No		
Specify						
The hazardous material consultant taking the	various hazardous	materials samples wa	as fully aware of the p	potential risks.		
Was accident prevention training provided in re	elation to the duties	s of the injured employ	ee prior to the incide	ent? ☐Yes ⊠No		
Specify						
N/A						

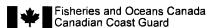
*		Fisheries and Oceans Canada Canadian Coast Guard	
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F. Immediate/Direct Causes (Required) (Check all that apply)					
Substandard Actions	Substandard Conditions				
☐Bypassing safety devices	Congested or restricted area				
Failure to check or monitor	Defective tools, equipment or materials				
Failure to communicate/coordinate	Excessive noise				
Failure to follow procedure/policy	Heat/cold exposure				
☐Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE				
Failure to react/correct	☐ Inadequate communication				
Failure to service equipment properly	☐Inadequate guards or barriers				
Failure to use PPE	☐ Inadequate information/data				
Failure to warn or secure	☐Inadequate instruction/procedure				
Horseplay	☐Inadequate preparation/planning				
☐ Improper lifting	☐Inadequate support/assistance				
☐ Improper loading, placing, mixing	☐ Inadequate ventilation				
☐Improper position/posture for task	☐Inadequate warning system				
Operating at improper speed	Lack of tools, equipment or materials				
☐Using defective equipment	Poor housekeeping				
Using equipment improperly	⊠Presence of harmful materials				
⊠Other action (Specify)	Radiation exposure				
None on this occasion, but implies that there was possibly a failure to	☐Uneven ground/terrain				
identify hazard at a previous time.	☐Weather or environmental conditions				
	Other condition (Specify)				
Immediate/Direct Causes (Required)					
	A suddish surrous the leading agree of the incident				
Of the above checked immediate/direct causes provide details a					
	aterials Assessment identified the hazards before the work was (for ACM & lead paint), it could be said that there was a "Failure"				
to identify hazard/risk".	(10) Acivi a lead painty, it could be said that there was a 1 and e				
G. Basic/Root Causes (Required) (Check all that apply)					
Personal Factors	Job Factors				
☐Emotional stress	Abuse or misuse of equipment				
□Fatigue	☐ Inadequate engineering or design				
Lack of knowledge and/or skill	☐ Inadequate hazard assessment				
Physical stress or capability	☐ Inadequate personnel to complete task				
Rushing or inattention	☐ Inadequate tools/equipment/materials				
⊠Other (Specify)	☐Inadequate training and/or familiarization				
This really was a non-incident, because the hazards were	☐Inadequate work standard/procedure				
identified before work commenced in that area.	☐ Lack of enforcement of procedure or supervision				
	Standards/procedures not developed				
	☐Wear and tear				
	◯ Other (Specify)				
	This really was a non-incident, because the hazards were identified before work commenced in that area.				



Basic/	Root	Causes	(Reau	ired)

Of the above checked Basic/Root cause	s provide deta	ils as to v	which one wa	s the leading cau	use of the	incident.		
The "incident" per se, was the identificat								
If the existence of the the hazardous materials debris is construed as an incident in itself, I think that would prove fruitless, considering that the history of the ACM debris is unknown and it was nevertheless dealt with correctly.								
H. Witnesses (As Required) (NOTE: Witnesses)	tness statement	s may be i	required depen	ding on the severi	ty of the inc	ident – Attach all additional		
Name of Witness # 1	Telephone #		Name of W	/itness # 3		Telephone #		
Ross McKenzie	250-882-127	3						
Name of Witness # 2	Telephone #		Name of W	/itness # 4		Telephone #		
I. Property / Equipment Damage (As R	Required)							
Nature and extent of property damage						Estimated Cost (\$)		
N/A						0		
J. Corrective & Preventative Measures recurrence)	s (Required) (Describe	corrective me	easures taken ar	nd/or recor	mmended to prevent		
Corrective action to prevent recurrence To prevent the existence of hazardous r	materials woul	d be to id	entify them al	I, and remove the		4 4 4 4 4 4 4 4		
but moreover, and perhaps the only use paint are potential hazards to be encour			ined from this	IIR is to potenti	ally alert c	rews that ACM & lead		
The debris & the lead paint were found	below a Waste	Oil Tank	that had pos	sibly never beer	removed	since it was installed 49		
years ago.								
Corrective action responsibility assigned	d to	Date t	o be complet	ed (YYYY-MM-DD)	Follow-u	p Date (YYYY-MM-DD)		
Ross McKenzie		2018-	01-11	2018-01-11		-11		
K. Investigation Completed By (Requi	red)							
Name of person investigating		elephone	e #	Signature		Corollic county by Done Mayeria		
Ross McKenzie	2	250-882-1	273	Ross McK	enzie	Degraph signed or kess wickerze- DN ch=Ross McKenzie, o-Canadian Coast Guard, qu=CCGS Bartlett, email-bartletchief@gmal.com, c≠CA Date 2018.01.20 10 45 05-08'00'		
Title Chief Engineer			Date (YYY)	/-MM-DD)	2018	3-01-20		
Email address BartlettCE@ccgs-ngcc.	gc.ca							
Investigators comments								
The positive hazardous materials asses work, and is an essential requirement be			ase, elucidate	the value of an	assessme	ent prior to performing		



L. Workplace OHS Committee / Health and Safety Representative Participation (Required)								
Workplace OHS Committee Member / Health and Safety Representative Information								
Name	Telephone # Signature							
Ryan Moore	250-882-1273	Ryan N. Moore	olitally isigned by Ryan N, Moore on-Ryan N, Moore, o≕Canadhan Coast Guard, ou≖DFO, all=Ryan, Moore@coge.egoc.gc ca, c≕CA te: 2018,01,20 16 54 56 -0€ 00°					
Title	Email address		Date (YYYY-MM-DD)					
Senior Engineer	BartlettSE@ccgs-ngcc.	gc.ca	2018-01-20					
Workplace OHS Committee Member/Health and Saf	ety Representative com	ments						
Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.								
M. Commanding Officer or Superintendent/Manag	ger (Required)							
Name of Commanding Officer / Responsible Manage	er Telephone #	Signature						
Michael McCullagh	250-882-3864	Michael McCullagh	Digitally signed by Nichael McCuttagh and State					
Title	Email address		Date (YYYY-MM-DD)					
Commanding Officer	BartlettCO@ccgs-r	gcc.gc.ca	2018-02-02					
Has the relevant task(s) on the Site Specific Risk Registe	r been reviewed and/or m	odified as a result of the incide	nt? ⊠Yes □No					
Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"								
Concur with intent of IRR								

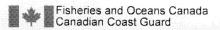
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INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

		urrences as per <u>Transportation Safety Board (TSB) Regulations</u> , Section 3(1), Il be completed within 30 days of the occurrence.
A. Type of Incident (Required) (Choose only one)	
 □ Disabling Injury (visit to medical □ First Aid □ Minor Injury (visit to medical pr □ Activation of an Emergency Production 	ofessional, no time lost)	Loss of Consciousness due to electric shock or toxic atmosphere Near Miss Pollution Property Damage
Fire or Explosion (Shore only)		Unsatisfactory Condition
Other (specify)		
B. General Information (Require	ed)	
Employer's (Department) Name		Site/Vessel Name (and official number)
Canadian Coast Guard		CCGS Bartlett
Date of Report (YYYY-MM-DD)	Mailing Address	25 Huron Street, Victoria, BC, V8V 4V9
Name of Responsible Supervisor	Ross McKenzie	Supervisor's Telephone # 250-882-1273
Organization (Select One)		
☐ National HQ ☐ Coast	Guard College 🛛 Regio	on (if selected, choose Directorate and Program/Branch below)
Regional Directorate (Select One)		
☐ AC's Office ☐ Fleet ☐] IBMS ITS	☐ Incident Management ☐ Navigational Programs
Program/Branch (Select One)		
AtoN	☐ MarSup	☐ Refit and Maintenance
Canso	☐ MCI	ROC
☐ CGSS	☐ MCTS	□ SAR
E&I	☐ ME	☐ Science
☐ EFM (C&P)	☐ MNS	☐ Vessels of Concern
☐ ER	☐ MSET	☐ Other
☐ Ice	Ops Business	
☐ ILS C. Employee Data (As Required) * (to be completed only if the	ne employee sustains an injury). * To be completed by the injured
employee's supervisor or their des		
Surname	Given Name	Initial(s) Age
Gender ☐Female ☐Male	Job Title	Years of experience in current position
Employment Status Indeterminate Term Other (Specify)	☐ Casual/Relief	☐Program Client ☐Student ☐Contractor

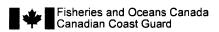


T Canadian Coast Guard	*	Fisheries and Oceans Canada Canadian Coast Guard
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D. Incident Information (Required)						
Did this involve a motor vehicle* accident? Y	'es ☐ No ⊠ *If yes	s, please ensure the <u>N</u> leted.	Motor Vehicle Accid	ent (MVA) Report is		
Did this involve Helicopter Operations? Y	′es ☐ No ⊠ Did th	is incident involve Sm	nall Craft Operation	s? Yes ☐ No ⊠		
Location of Incident (include geographical na	ame of body of water	r, waterway, harbour,	latitude, longitude i	f applicable)		
Engine Room, CCGS Bartlett, Victoria Coast	t Guard Base, Victor	ia harbour				
Date of Incident (YYYY-MM-DD) 2018.01.08		Time of Incident (Loc	al) 0950 h	ours		
Body part injured (if applicable)						
☐ Abdomen ☐ Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin		
Arm Body System / Inter	nal 🗌 Foot	☐ Head	Leg	☐ Shoulder		
☐ Auditory ☐ Chest	☐ Hand	☐ Hip	Multiple injuries	Unknown		
Nature of injury (if known)						
Burns		Multiple Injuries				
☐ Fractures		☐ Traumatic joint/lig	ament and muscle/	tendon injury		
☐ Injury to Nerves and Spinal Cord		Wounds, Laceration	ons and Amputation	าร		
☐ Intracranial Injury		Unknown				
E. Investigation Information (Required)						
Type of Event						
Caught in or between	Exposure to a trau	matic event	Slips, trips and	falls		
Contact with harmful substance	☐ Mechanical/Equip	ment Failure	☐ Struck by or ag	ainst		
Exposure to Electricity	☐ M echanism of har	m unknown	☐ Vehicle inciden	t		
Exposure to Fire	Overexertion					
Exposure to heat/cold	Repetitive Motion					
Exposure to noise	Exposure to noise Hazardous material spill					
Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)						
The Bartlett was informed by our Asbestos consultant of a hazardous condition following a "routine" pre-work Hazardous Material Assessment prior to replacing the bulkhead insulation behind the Engineroom Dirty Oil Tank. We were advised to stay clear of and not disturb the pile of debris containing asbestos (old gasket material), and the lead paint used on the base below the tank, and to isolate that area of the engineroom - and to have suitable qualified professionals remove the hazards as ASAP. Contractor removed the ACM & Lead Paint hazards 2 days later, in preparation for the reinsulating the bulkheads.						
Was a Risk Assessment performed prior to co	ommencement of the	e task which resulted	in the incident?	⊠Yes □No		
Specify						
The hazardous material consultant (NWE) ta	aking the various haz	zardous materials sam	nples was fully awa	re of the potential risks.		
Was accident prevention training provided in	relation to the duties	of the injured employ	ee prior to the incid	dent? ☐Yes ⊠No		
Specify						
N/A						

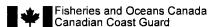
Fisheries and Oceans Canada Canadian Coast Guard

F. Immediate/Direct Causes (Required) (Check all that apply)					
Substandard Actions	Substandard Conditions				
☐Bypassing safety devices	Congested or restricted area				
Failure to check or monitor	Defective tools, equipment or materials				
Failure to communicate/coordinate	Excessive noise				
Failure to follow procedure/policy	Heat/cold exposure				
☐Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE				
Failure to react/correct	☐ Inadequate communication				
Failure to service equipment properly	☐Inadequate guards or barriers				
Failure to use PPE	☐Inadequate information/data				
Failure to warn or secure	☐ Inadequate instruction/procedure				
Horseplay	☐ Inadequate preparation/planning				
☐ Improper lifting	☐Inadequate support/assistance				
Improper loading, placing, mixing	☐ Inadequate ventilation				
☐Improper position/posture for task	☐ Inadequate warning system				
Operating at improper speed	Lack of tools, equipment or materials				
☐Using defective equipment	☐ Poor housekeeping				
☐ Using equipment improperly					
⊠Other action (Specify)	Radiation exposure				
None on this occasion, but implies that there was possibly a failure to	☐Uneven ground/terrain				
identify hazard at a previous time.	☐Weather or environmental conditions				
	Other condition (Specify)				
immediate/Direct Causes (Required)					
Of the above checked immediate/direct causes provide details	as to which one was the leading cause of the incident.				
	laterials Assessment identified the hazards before the work was (for ACM & lead paint), it could be said that there was a "Failure				
G. Basic/Root Causes (Required) (Check all that apply)					
Personal Factors	Job Factors				
☐Emotional stress	Abuse or misuse of equipment				
Fatigue	☐Inadequate engineering or design				
Lack of knowledge and/or skill	☐ Inadequate hazard assessment				
Physical stress or capability	☐ Inadequate personnel to complete task				
Rushing or inattention	☐Inadequate tools/equipment/materials				
⊠Other (Specify)	☐Inadequate training and/or familiarization				
This "incident" was merely the discovery of 2 hazardous	☐Inadequate work standard/procedure				
materials in a routine Hazardous Materials Assessment where	Lack of enforcement of procedure or supervision				
we had not expected to find any,	Standards/procedures not developed				
	Wear and tear				
	◯ Other (Specify)				
	A Routine Risk Assessment revealed the presence of previously unknown hazardous materials in the area where the contractors were scheduled to work.				



Basic/Root Causes ((Required)
---------------------	------------

Basic/Root Causes (Required)								
Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.								
The "incident" per se, was the identification of several hazardous materials (ACM gasket remnants & lead paint). The existence of the the hazardous materials debris (in an areas where we had not expected to encounter the hazardous materials) is the incident in itself. The materials were discovered in a pre-work assessment, and this is the first incident of asbestos gasket material discovery, and the identification of the lead paint hazard.								
H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)								
Name of Witness # 1	Telephone	#		Name of W	/itness # 3		Telephone #	
Ross McKenzie	250-882-12	273						
Name of Witness # 2	Telephone	#		Name of W	/itness # 4		Telephone #	
I. Property / Equipment Damage (As F	Required)							
Nature and extent of property damage							Estimated Cost (\$)	
N/A							0	
J. Corrective & Preventative Measure recurrence)	s (Required)	(De	escribe	corrective me	easures taken ar	nd/or recomr	nended to prevent	
Identifying the hazardous materials prior to commencing a job that involves the presence of hazardous materials (such as ACM & lead paint) is the next best thing to identifying them all, and remove them, and moreover, and perhaps the most useful information to be gained from this IIR is to alert crews that ACM gaskets & lead paint are potential hazards to be encountered on the ship. The debris & the lead paint were found below a Waste Oil Tank that had possibly never been removed since it was installed 49 years ago.								
Corrective action responsibility assigne	d to		Date to	be complet	ed (YYYY-MM-DD)	Follow-up	Date (YYYY-MM-DD)	
Ross McKenzie			2018-01-11			2018-01-1	1	
K. Investigation Completed By (Requi	ired)							
Name of person investigating		Tel	lephone	#	Signature			
Ross McKenzie		250	0-882-1	273	Ross McK	enzie 🖁	tally signed by Ross McKenze o=Ross McKenze, o=Canadian Coast Guard, ou=CCGS Bartlett al=bartlettchel@gmat.com. c=CA e 2018.01,20 10 45 05 -08'00'	
Title Chief Engineer			Date (YYYY-MM-DD) 2018-01-20					
Email address BartlettCE@ccgs-ngcc.	gc.ca							
Investigators comments								
The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.								



L. Workplace OHS Committee / Health and Safety Representative Participation (Required)								
Workplace OHS Committee Member / Health and Safety Representative Information								
Name	Telephone # Signature							
Ryan Moore	250-882-1273	Ryan N. Moore	tally signed by Ryan N. Moore on=Ryan N. Moore, o=Canadkan Coast Guard. ou=DFO, il=Ryan.Moore@cogs=ngcc.gc.ca, c=CA s. 2018.01,20 16 54 56 -08'00'					
Title	Email address		Date (YYYY-MM-DD)					
Senior Engineer	BartlettSE@ccgs-ngcc.	дс.са	2018-01-20					
Workplace OHS Committee Member/Health and Sa	fety Representative com	ments						
Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.								
M. Commanding Officer or Superintendent/Manag	ger (Required)							
Name of Commanding Officer / Responsible Manag	er Telephone #	Signature						
Michael McCullagh	250-882-3864	Michael McCullagh	Digitally signed by Michael McCullagh ON: p==Michael McCullagh: o=Canadan Coast Guard Fleet ou=CCGS Bartlett: email=BartlettCD@ber.cogs-ingco.gc.cat. c=CA Date: 2018.02.02.10.15.27-08900					
Title	Email address		Date (YYYY-MM-DD)					
Commanding Officer	BartlettCO@ccgs-n	gcc.gc.ca	2018-02-02					
Has the relevant task(s) on the Site Specific Risk Registe	r been reviewed and/or mo	odified as a result of the incider	nt? ⊠Yes □No					
Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"								
Concur with intent of IRR								

Privacy Notice

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The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

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Sheppard, Frederick

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

March 1, 2018 12:44 PM

To:

CCGS-NGCC, Bartlett Logistics Officer

Cc:

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC,

Bartlett Chief Officer

Subject:

Re: Recent ACM IIR History

Attachments:

Wheelhouse Console Dust Sampling.pdf; Wheelhouse Console ACM - Wiring

Insulation.pdf; Laundry Room Bulkead.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018.pdf; IIR Eng.Room ACM Debris and Lead Paint Ver.5 01.03.2018.pdf

Importance:

High

Cam,

Here's my list of recent ACM IIRs (Asbestos Containing Materials). I do not have any record of them being sent ashore.

- 1. Wheelhouse Console Dust Sampling 2018-01-12
- 2. Wheelhouse Console ACM Wiring Insulation 2018-01-28
- 3. Laundry Room Bulkhead 2018-01-28
- 4. IIR Eng.Room ACM Debris and Lead Paint Ver.4 09.01.2018. But please note that this was a WC IIR signed by Captain McCullagh, and that I have revised wording as document:......
- 4b. IIR Eng.Room ACM Debris and Lead Paint Ver.5 09.01.2018 And Captain M.Shuckburgh may or may not need to or want to sign this depending on whether it has been submitted ashore.

Thanks,

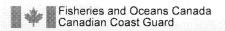
Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



INCIDENT INVESTIGATION REPORT (IIR)

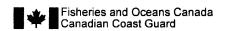
9.B.1

NOTE: If this incident falls under the define a Report.	nition of a reportable Marine of a Marine Occurrence form					8) Regulations,	Section 3(1),
A. Type of Incident (Required) (C	hoose only one)						
☐ Disabling Injury (visit to medical	professional, time lost)		oss of Conscio	usness due to	electric s	hock or toxic	atmosphere
☐ First Aid			lear Miss				
Minor Injury (visit to medical prof	fessional, no time lost)	□F	Pollution				
☐ Activation of an Emergency Prod	edure	□F	Property Damag	е			
☐ Fire or Explosion (Shore only)		\boxtimes L	Insatisfactory C	ondition			
Other (specify)							
B. General Information (Required							
Employer's (Department) Name			Site/Vessel Na	me (and offici	al numbe	r)	
Canadian Coast Guard			CCGS Bartlett				
Date of Report (YYYY-MM-DD)	Mailing Addre	ess	25 Huron Stree	t, Victoria, BC	, V8V 4V9	9	
Name of Responsible Supervisor	oss McKenzie		Supervisor's Te	elephone # 2	50-882-12	?73	
Organization (Select One)							
☐ National HQ ☐ Coast G	iuard College 🛛 🖂 R	egion	(if selected, cho	ose Directora	te and Pro	ogram/Branch	n below)
Regional Directorate (Select One)							
	IBMS ITS		☐ Incident Ma	nagement	☐ Na	avigational Pr	ograms
Program/Branch (Select One)							
AtoN	☐ MarSup					intenance	
Canso	☐ MCI			ROC			
CGSS	☐ MCTS			☐ SAR			
☐ E&I	□МЕ			Science			
EFM (C&P)	☐ MNS			☐ Vessels of Concern			
ER STREET	☐ MSET			Other			
☐ Ice	Ops Busine	SS					
☐ ILS							
C. Employee Data (As Required) employee's supervisor or their design				iins an injury).	* To be o	completed by	the injured
Surname	Given Name			Initial(s)		Age	
Gender	Job Title			Years of exp	erience ir	n current	
Female Male				position			
Employment Status							
☐Indeterminate ☐Term	☐Casual/Relie	ef	☐Program Clie	ent [Stud	ent	☐ Contr	actor
Other (Specify)							

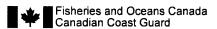
D. Incident Information (Required)	D. Incident Information (Required)				
Did this involve a motor vehicle* accident? Yes \(\square\) No \(\square\) *If yes, please ensure the Motor Vehicle Accident (MVA) Report is completed.					
Did this involve Helicopter Operations	s? Yes ☐ No ⊠ Did t	his incident involve Si	mall Craft Operations	? Yes ☐ No ⊠	
Location of Incident (include geographical name of body of water, waterway, harbour, latitude, longitude if applicable)					
Engine Room, CCGS Bartlett, Victoria Coast Guard Base, Victoria harbour					
Date of Incident (YYYY-MM-DD) 2018.01.08 Time of Incident (Local)			cal) 0950 hou	ırs	
Body part injured (if applicable)					
Abdomen Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin	
☐ Arm ☐ Body System	n / Internal 🔲 Foot	☐ Head	Leg	Shoulder	
Auditory Chest	☐ Hand	☐ Hip	☐ Multiple injuries	Unknown	
Nature of injury (if known)					
	Burns				
☐ Fractures ☐ Traumatic joint/ligament and muscle/tendon injury					
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations		i			
☐ Intracranial Injury ☐ Unknown					
E. Investigation Information (Requ	ired)				
Type of Event					
Caught in or between	☐ Exposure to a traumatic event ☐ Slips, trips and falls				
Contact with harmful substance		☐ Mechanical/Equipment Failure ☐ Struck by or against		nst	
Exposure to Electricity		☐ Mechanism of harm unknown ☐ Vehicle incident			
Exposure to Fire	Overexertion	☐ Overexertion			
Exposure to heat/cold	Repetitive Motion	Repetitive Motion			
Exposure to noise			Hazardous material	spill	
Description of Incident - Sequence of Events (attach additional sheets, chart(let)s, diagrams, location of any failed or damaged parts relevant to the investigation or photos as required)					
The Bartlett was informed by our Asbestos consultant of a hazardous condition following a "routine" pre-work Hazardous Material Assessment prior to replacing the bulkhead insulation behind the Engineroom Dirty Oil Tank. We were advised to stay clear of and not disturb the pile of debris containing asbestos (old gasket material), and the lead paint used on the base below the tank, and to isolate that area of the engineroom - and to have suitable qualified professionals remove the hazards as ASAP. Contractor removed the ACM & Lead Paint hazards 2 days later, in preparation for the reinsulating the bulkheads.					
Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?					
Specify					
The hazardous material consultant (NWE) taking the various hazardous materials samples was fully aware of the potential risks.					
Was accident prevention training provided in relation to the duties of the injured employee prior to the incident? ☐Yes ☒No					
Specify					
N/A					

-	Fisheries and Oceans Canada
\blacksquare $oldsymbol{ au}$	Fisheries and Oceans Canada Canadian Coast Guard

F. Immediate/Direct Causes (Required) (Check all that apply)				
Substandard Actions	Substandard Conditions			
☐Bypassing safety devices	☐Congested or restricted area			
☐Failure to check or monitor	Defective tools, equipment or materials			
Failure to communicate/coordinate	Excessive noise			
Failure to follow procedure/policy	Heat/cold exposure			
Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE			
Failure to react/correct	☐Inadequate communication			
☐Failure to service equipment properly	☐Inadequate guards or barriers			
Failure to use PPE	☐Inadequate information/data			
☐Failure to warn or secure	☐Inadequate instruction/procedure			
☐Horseplay	☐Inadequate preparation/planning			
☐ Improper lifting	☐Inadequate support/assistance			
☐Improper loading, placing, mixing	☐Inadequate ventilation			
☐Improper position/posture for task	☐Inadequate warning system			
Operating at improper speed	☐ Lack of tools, equipment or materials			
☐Using defective equipment	Poor housekeeping			
☐Using equipment improperly	⊠Presence of harmful materials			
⊠Other action (Specify)	Radiation exposure			
None on this occasion, but implies that there was possibly a failure to	☐Uneven ground/terrain			
identify hazard at a previous time.	Weather or environmental conditions			
	Other condition (Specify)			
mmediate/Direct Causes (Required)				
Of the above checked immediate/direct causes provide details a	as to which one was the leading cause of the incident.			
This is really a non-incident becasue the pre-work Hazardous Materials Assessment identified the hazards before the work was performed. However, prior to receiving the positive test results (for ACM & lead paint), it could be said that there was a "Failure to identify hazard/risk".				
G. Basic/Root Causes (Required) (Check all that apply)				
Personal Factors	Job Factors			
☐Emotional stress	Abuse or misuse of equipment			
☐ Fatigue	☐Inadequate engineering or design			
Lack of knowledge and/or skill	☐Inadequate hazard assessment			
☐Physical stress or capability	☐Inadequate personnel to complete task			
Rushing or inattention	☐Inadequate tools/equipment/materials			
⊠Other (Specify)	☐Inadequate training and/or familiarization			
This "incident" was merely the discovery of 2 hazardous	☐Inadequate work standard/procedure			
materials in a routine Hazardous Materials Assessment where	Lack of enforcement of procedure or supervision			
we had not expected to find any.	Standards/procedures not developed			
	☐Wear and tear			
	☑Other (Specify)			
	A Routine Risk Assessment revealed the presence of previously unknown hazardous materials in the area where the contractors were scheduled to work.			



basic/Root Causes (Required)								
Of the above checked Basic/Root cause								
The "incident" per se, was the identification The existence of the the hazardous manaterials) is the incident in itself. The masbestos gasket material discovery, and	terials debris (naterials were	in a	n areas	where we h	ad not expected rk assessment, a	to encounte	er the hazardous	
H. Witnesses (As Required) (NOTE: Winformation)	itness statemen	nts m	ay be re	equired depen	ding on the severi	ty of the incid	ent – Attach all additional	
Name of Witness # 1	Telephone #	‡		Name of W	/itness # 3		Telephone #	
Ross McKenzie								
Name of Witness # 2	Telephone #	‡		Name of W	/itness # 4		Telephone #	
I. Property / Equipment Damage (As I	Required)							
Nature and extent of property damage							Estimated Cost (\$)	
N/A							0	
J. Corrective & Preventative Measure recurrence)	s (Required)	(De	scribe (corrective me	easures taken ar	nd/or recomr	nended to prevent	
Identifying the hazardous materials price a lead paint) is the next best thing to id information to be gained from this IIR is on the ship. The debris & the lead paint were found years ago.	entifying them s to alert crews	n all s tha	, and re at ACM	emove them, gaskets & le	and moreover, a ead paint are pot	and perhaps ential hazaro	the most useful ds to be encountered	
Corrective action responsibility assigne	d to		Date to	be complete	ed (YYYY-MM-DD)	Follow-up	Date (YYYY-MM-DD)	
Ross McKenzie			2018-0	1-11		2018-01-1	1	
K. Investigation Completed By (Requ	ired)							
Name of person investigating		Tele	ephone	#	Signature			
Ross McKenzie		250	-882-12	273	Ross McK	enzie 🖁	glalfly signed by Ross McKenzie (I con-Ross McKenzie, pirCanadian Coast Guard, our-CCGS Bardett, aarbontelction@gmail.com, crCA (Ie. 2018.01,20.10.45.05-08'00'	
Title Chief Engineer				Date (YYY)	/-MM-DD)	2018-0)1-20	
Email address BartlettCE@ccgs-ngcc	.gc.ca							
Investigators comments								
The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.								



L. Workplace OHS Committee / Health and Safety Representative Participation (Required)								
Workplace OHS Committee Member / Health and Safety Representative Information								
Name	Telephone #							
Ryan Moore	250-882-1273	ILVOD NI NACOTO P	ghalfy signed by Ryan N. Moore N. cn=Ryan N. Moore, o=Canadian Coast Guard, ou=DFO na4=Ryan Moore@coge-ngc gc.ca, c=CA ste. 2018.01.20 16 54 56 -08'00'					
Title	Email address		Date (YYYY-MM-DD)					
Senior Engineer	BartlettSE@ccgs-ngcc.	gc.ca	2018-01-20					
Workplace OHS Committee Member/Health and Saf	ety Representative com	ments						
Finding hazardous materials through the PJSA / Pre-work Hazardous Materials Assessment afforded the Bartlett the opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.								
M. Commanding Officer or Superintendent/Manag	ger (Required)							
Name of Commanding Officer / Responsible Manage	er Telephone #	Signature						
Michael McCullagh	250-882-3864	Michael McCullagh	Digitally signed by Michael McCullagh DN: pre-Michael McCullagh, or Canadian Coast Guard Fleet. ou=CCGS Bardiett, email-BartletCOgbar.cogs-ngcc.gc.ca, c=CA Date: 2018.02.02 10 15 27 -08'00'					
Title	Email address		Date (YYYY-MM-DD)					
Commanding Officer	BartlettCO@ccgs-n	gcc.gc.ca	2018-02-02					
Has the relevant task(s) on the Site Specific Risk Registe	r been reviewed and/or mo	odified as a result of the incide	nt? ⊠Yes ⊡No					
Additional comments to include additions, deletions or changes to corrective action recommendations from Section "J"								
Concur with intent of IRR								

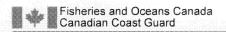
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INCIDENT INVESTIGATION REPORT (IIR)

9 B 1

		rences as per <u>Transportation Safety Board (TSB) Regulations</u> , Section 3(1), be completed within 30 days of the occurrence.				
A. Type of Incident (Required) (C	hoose only one)					
☐ Disabling Injury (visit to medical	professional, time lost)	Loss of Consciousness due to electric shock or toxic atmosphere				
☐ First Aid	_	Near Miss				
☐ Minor Injury (visit to medical pro	fessional, no time lost)	Pollution				
☐ Activation of an Emergency Pro	cedure	Property Damage				
☐ Fire or Explosion (Shore only)	\boxtimes	Unsatisfactory Condition				
Other (specify)						
B. General Information (Required						
Employer's (Department) Name		Site/Vessel Name (and official number)				
Canadian Coast Guard		CCGS Bartlett				
Date of Report (YYYY-MM-DD)	Mailing Address	25 Huron Street, Victoria, BC, V8V 4V9				
Name of Responsible Supervisor F	Ross McKenzie	Supervisor's Telephone # 250-882-1273				
Organization (Select One)						
☐ National HQ ☐ Coast 0	Guard College 🔀 Regio	n (if selected, choose Directorate and Program/Branch below)				
Regional Directorate (Select One)						
☐ AC's Office ⊠ Fleet ☐	IBMS ITS	☐ Incident Management ☐ Navigational Programs				
Program/Branch (Select One)						
☐ AtoN	☐ MarSup					
☐ Canso	☐ MCI	□ROC				
☐ CGSS	☐ MCTS	SAR				
☐ E&I	□ мЕ	☐ Science				
☐ EFM (C&P)	☐ MNS	☐ Vessels of Concern				
☐ ER	☐ MSET	☐ Other				
☐ Ice	Ops Business					
☐ ILS						
C. Employee Data (As Required) employee's supervisor or their design		e employee sustains an injury). * To be completed by the injured inpleted.				
Surname	Given Name	Initial(s) Age				
Gender Female Male	Job Title	Years of experience in current position				
Employment Status						
☐ Indeterminate ☐ Term	Casual/Relief	□ Program Client □ Student □ Contractor				
Other (Specify)						

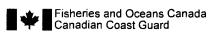


	*	Fisheries and Oceans Canada Canadian Coast Guard
ם	In	cident Information (Required

D. Incident Information (Required)						
	es, please ensure the Motor Vehicle Accident (MVA) Report is pleted.					
Did this involve Helicopter Operations? Yes ☐ No ☒ Did	this incident involve Small Craft Operations? Yes \Box No $oxtimes$					
Location of Incident (include geographical name of body of wat	er, waterway, harbour, latitude, longitude if applicable)					
Engine Room, CCGS Bartlett, Victoria Coast Guard Base, Victoria	oria harbour					
Date of Incident (YYYY-MM-DD) 2018.01.08	Time of Incident (Local) 0950 hours					
Body part injured (if applicable)						
☐ Abdomen ☐ Back ☐ Eye	☐ Neck ☐ Knee ☐ Pelvis / Groin					
☐ Arm ☐ Body System / Internal ☐ Foot	☐ Head ☐ Leg ☐ Shoulder					
Auditory Chest Hand	☐ Hip ☐ Multiple injuries ☐ Unknown					
Nature of injury (if known)						
Burns	☐ Multiple Injuries					
☐ Fractures	☐ Traumatic joint/ligament and muscle/tendon injury					
☐ Injury to Nerves and Spinal Cord						
☐ Intracranial Injury	Unknown					
E. Investigation Information (Required)						
Type of Event						
☐ Caught in or between ☐ Exposure to a tra	umatic event Slips, trips and falls					
☐ Contact with harmful substance ☐ Mechanical/Equi	oment Failure Struck by or against					
Exposure to Electricity Mechanism of ha	rm unknown					
Exposure to Fire Overexertion						
Exposure to heat/cold Repetitive Motion	i de la companya de					
Exposure to noise	Hazardous material spill					
Description of Incident - Sequence of Events (attach additional parts relevant to the investigation or photos as required)	sheets, chart(let)s, diagrams, location of any failed or damaged					
clear of and not disturb the pile of debris containing asbestos (c	behind the Engineroom Dirty Oil Tank. We were advised to stay old gasket material), and the lead paint used on the base below we suitable qualified professionals remove the hazards as ASAP.					
Was a Risk Assessment performed prior to commencement of the	ne task which resulted in the incident?					
Specify						
The hazardous material consultant taking the various hazardou	s materials samples was fully aware of the potential risks.					
Was accident prevention training provided in relation to the dutie	s of the injured employee prior to the incident?					
Specify						
N/A						

•	Fisheries and Oceans Canada	
***	Control of the contro	
Ŧ	Fisheries and Oceans Canada Canadian Coast Guard	

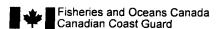
F. Immediate/Direct Causes (Required) (Check all that apply)	F. Immediate/Direct Causes (Required) (Check all that apply)					
Substandard Actions	Substandard Conditions					
☐Bypassing safety devices	Congested or restricted area					
☐Failure to check or monitor	Defective tools, equipment or materials					
Failure to communicate/coordinate	Excessive noise					
Failure to follow procedure/policy	Heat/cold exposure					
Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE					
Failure to react/correct	☐ Inadequate communication					
Failure to service equipment properly	☐Inadequate guards or barriers					
Failure to use PPE	☐Inadequate information/data					
Failure to warn or secure	☐Inadequate instruction/procedure					
☐Horseplay	☐Inadequate preparation/planning					
☐ Improper lifting	☐ Inadequate support/assistance					
☐Improper loading, placing, mixing	☐ Inadequate ventilation					
☐ Improper position/posture for task	☐ Inadequate warning system					
Operating at improper speed	Lack of tools, equipment or materials					
☐Using defective equipment	Poor housekeeping					
Using equipment improperly	⊠Presence of harmful materials					
⊠Other action (Specify)	Radiation exposure					
None on this occasion, but implies that there was possibly a failure to	☐Uneven ground/terrain					
identify hazard at a previous time.	☐Weather or environmental conditions					
	Other condition (Specify)					
mmediate/Direct Causes (Required)						
Of the above checked immediate/direct causes provide details a						
This is really a non-incident becasue the pre-work Hazardous M performed. However, prior to receiving the positive test results to identify hazard/risk".	aterials Assessment identified the hazards before the work was (for ACM & lead paint), it could be said that there was a "Failure					
G. Basic/Root Causes (Required) (Check all that apply)						
Personal Factors	Job Factors					
☐Emotional stress	Abuse or misuse of equipment					
☐ Fatigue	☐ Inadequate engineering or design					
Lack of knowledge and/or skill	☐ Inadequate hazard assessment					
Physical stress or capability	☐ Inadequate personnel to complete task					
Rushing or inattention	☐ Inadequate tools/equipment/materials					
⊠Other (Specify)	☐ Inadequate training and/or familiarization					
This really was a non-incident, because the hazards were	☐ Inadequate work standard/procedure					
identified before work commenced in that area.	Lack of enforcement of procedure or supervision					
	Standards/procedures not developed					
	☐Wear and tear					
	⊠ Other (Specify)					
	This really was a non-incident, because the hazards were identified before work commenced in that area.					



Basic/Root Causes (Required	l)								
Of the above checked Basic/Ro									
The "incident" per se, was the interest of the existence of the the hazar considering that the history of the	rdous materials debris	s is	construe	d as an incid	dent in itself, I th	ink th	at wo		
H. Witnesses (As Required) (Ninformation)	NOTE: Witness stateme	nts r	may be re	equired depen	ding on the severi	ity of t	ne inci	dent – Attach all additional	
Name of Witness # 1	Name of Witness # 1 Telephone # Name of Witness # 3 Telephone #								
Ross McKenzie	250-882-12	273							
Name of Witness # 2	Telephone	#		Name of W	fitness # 4			Telephone #	
								J	
I. Property / Equipment Dama	ge (As Required)								
Nature and extent of property of	damage							Estimated Cost (\$)	
N/A								0	
J. Corrective & Preventative N recurrence)	Measures (Required)) (De	escribe o	corrective me	easures taken ar	nd/or	recom	nmended to prevent	
Corrective action to prevent red To prevent the existence of har but moreover, and perhaps the paint are potential hazards to be The debris & the lead paint were years ago.	zardous materials wo only useful information oe encountered on the	uld l on to shi	be to ide o be gaii ip.	entify them all ned from this	I , and remove to IR is to potenti	ially a	lert cr		
Corrective action responsibility	assigned to		Date to	be complet	ed (YYYY-MM-DD)	Follo	ow-up	Date (YYYY-MM-DD)	
Ross McKenzie			2018-0	1-11		201	8-01-	11	
K. Investigation Completed B	y (Required)				_				
Name of person investigating Telephone # Signature									
Ross McKenzie 250-882-1273 Ross McKenzie Optats sparet by Ross McKenzie Optats sparet by Ross McKenzie Optats sparet by Ross McKenzie Optats before a Characteristic of Barrieris and Francisco Control of Characteristic Optats (Sant Control of Characteri									
Title Chief Engineer Date (YYYY-MM-DD) 2018-01-20									
Email address BartlettCE@cc	Email address BartlettCE@ccgs-ngcc.gc.ca								
Investigators comments									
The positive hazardous materia	ale accocement findin	ae ii	n this ca	se elucidate	the value of an	2000	eeme	nt prior to performing	

The positive hazardous materials assessment findings in this case, elucidate the value of an assessment prior to performing work, and is an essential requirement before contracting a job.





L. Workplace OHS Committee / Health and Safety Representative Participation (Required)							
Workplace OHS Committee Member / Health and Safety Representative Information							
Name	Telephone #						
Ryan Moore	250-882-1273	Ryan N. Moore	ptelly signed by Ryan N. Moore chi-Ryan N. Moore, or-Canadian Coast Guard, du≔DEO aal-Ryan Moore@cogsingoo, gc. cs. c≠CA te. 2018.01.20 16.54.56-08'00'				
Title	Email address		Date (YYYY-MM-DD)				
Senior Engineer	BartlettSE@ccgs-ngcc.	gc.ca	2018-01-20				
Workplace OHS Committee Member/Health and Sat	ety Representative com	ments					
opportunity to avoid a potentially hazardous situation for a contractor as well as any ships crew in the area of the work being performed. This result proves the value in having these procedures in place.							
M. Commanding Officer or Superintendent/Manag	<u> </u>						
Name of Commanding Officer / Responsible Manage	er Telephone #	Signature	Dintally sunned by Michael NicCullanh				
Michael McCullagh	250-882-3864	Michael McCullagh	Digitally signed by Michael McCullagh NY on-Michael McCullagh or Canadran Coast Guard Fleet, our-CCGS Barthett, email-BarthettOrgbar.cogs.ngcc.gc.ca, c=CA Date 2018.02.02 10 15 27 -08 00*				
Title	Email address		Date (YYYY-MM-DD)				
Commanding Officer	BartlettCO@ccgs-n	gcc.gc.ca	2018-02-02				
Has the relevant task(s) on the Site Specific Risk Registe	r been reviewed and/or mo	odified as a result of the incide	nt? ⊠Yes □No				
Additional comments to include additions, deletions	or changes to corrective	action recommendations fro	m Section "J"				
Concur with intent of IRR							

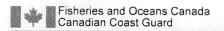
Privacy Notice

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The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the <u>Privacy Act</u> and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: <u>DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca</u>.



INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the de	finition of a reportable Marine (t of a Marine Occurrence form					3) Regulations.	Section 3(1),	
A. Type of Incident (Required) (Choose only one)							
Disabling Injury (visit to medica		Loss of Conscio	usness due to	electric s	hock or toxic	c atmosphere		
☐ First Aid			Near Miss					
Minor Injury (visit to medical pro	ofessional, no time lost)		Pollution					
Activation of an Emergency Pro	ocedure		☐ Property Damage					
Fire or Explosion (Shore only)		\boxtimes	Unsatisfactory C	Condition				
Other (specify)								
B. General Information (Require	d)							
Employer's (Department) Name			Site/Vessel Na	ıme (and offic	ial numbe	r)		
Coast Guard Fleet			CCGS Bartlett					
Date of Report (YYYY-MM-DD) 2018-	01-28 Mailing Addre	ess	25 Huron Stree	t, Victoria, BC	, V8V 4V	9		
Name of Responsible Supervisor	M. McCullagh		Supervisor's Te	elephone # 2	50-882-38	64		
Organization (Select One)								
☐ National HQ ☐ Coast	Guard College 🛮 🖂 Re	egion	(if selected, cho	ose Directora	te and Pro	ogram/Branc	h below)	
Regional Directorate (Select One)								
☐ AC's Office ⊠ Fleet ☐] IBMS ITS		Incident Ma	nagement	☐ Na	vigational P	rograms	
Program/Branch (Select One)								
AtoN	☐ MarSup				it and Mai	ntenance		
Canso	☐ MCI		ROC					
CGSS	☐ MCTS		☐ SAR					
☐ E&I	☐ ME			Scie	ence			
☐ EFM (C&P)	⊠ MNS			☐ Ves	sels of Co	oncern		
☐ ER	☐ MSET			Other				
☐ Ice	Ops Busines	SS			<u> </u>			
☐ ILS								
 C. Employee Data (As Required) employee's supervisor or their desi 				iins an injury).	* To be o	completed by	the injured	
Surname	Given Name			Initial(s)		Age		
Gender Female Male	and the			Years of experience in current position				
Employment Status								
☐ Indeterminate ☐ Term ☐ Other (Specify) ☐	Casual/Reliet	f	Program Clie	ent Stud	ent	☐Cont	ractor	

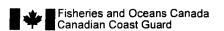


Fisheries and Oceans C Canadian Coast Guard	Canada
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D. Incident Inform	ation (Required)						
Did this involve a m	otor vehicle* accident?	Yes 🗌		es, please ensure t pleted.	the <u>Motor Vehic</u>	de Accide	nt (MVA) Report is
Did this involve Heli	copter Operations?	Yes 🗌	No 🛭 Did t	his incident involve	e Small Craft O	perations	? Yes ☐ No ⊠
Location of Inciden	t (include geographical	name of I	oody of wate	er, waterway, harb	our, latitude, lor	ngitude if a	applicable)
Victoria Coast Gua	rd Base						
Date of Incident (YY	YY-MM-DD) 2018-01-	27		Time of Incident	(Local)	1345	
Body part injured (if	applicable)						
☐ Abdomen	☐ Back		Eye	□ Neck	☐ Knee		Pelvis / Groin
☐ Arm	Body System / In	ternal 🗌	Foot	☐ Head	Leg		Shoulder
Auditory	Chest		Hand	☐ Hip		e injuries	Unknown
Nature of injury (if k	nown)						
Burns				Multiple Injurie	es		
Fractures				☐ Traumatic joir	nt/ligament and	muscle/te	ndon injury
☐ Injury to Nerves	and Spinal Cord			☐ Wounds, Lace	erations and An	nputations	
☐ Intracranial Injur	у			Unknown			
E. Investigation In	formation (Required)						
Type of Event							
Caught in or bet	ween	Expos	sure to a tra	umatic event	Slips, to	rips and fa	Ills
Contact with har	mful substance	☐ Mech	anical/Equi p	ipment Failure Struck by or against			
Exposure to Elec	ctricity		anism of ha	rm unknown	☐ Vehicle incident		
Exposure to Fire	•	Overe	exertion		⊠ Other (specify)	
Exposure to hea	t/cold	Repe	titive Motion				
Exposure to nois	se				Cracked s	eam in as	bestos bulkhead
-	lent - Sequence of Eve e investigation or photo	•		sheets, chart(let)s,	diagrams, loca	ition of an	y failed or damaged
	covered a crack and tw The cracked and split jo						
Was a Risk Assessr	ment performed prior to	commen	cement of th	ne task which resul	Ited in the incide	ent?	□Yes □No
Specify							
Was accident preve	ntion training provided	in relation	to the dutie	s of the injured em	ployee prior to	the incide	nt? Yes No
Specify							
					4		
L							

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	-		Fisheries and Oceans Canada	
	Ŧ		Fisheries and Oceans Canada Canadian Coast Guard	

F. Immediate/Direct Causes (Required) (Check all that apply)					
Substandard Actions	Substandard Conditions				
☐Bypassing safety devices	Congested or restricted area				
☐Failure to check or monitor	☐Defective tools, equipment or materials				
Failure to communicate/coordinate	Excessive noise				
Failure to follow procedure/policy	☐Heat/cold exposure				
☐Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE				
Failure to react/correct	☐ Inadequate communication				
Failure to service equipment properly	☐Inadequate guards or barriers				
Failure to use PPE	☐Inadequate information/data				
Failure to warn or secure	☐Inadequate instruction/procedure				
☐Horseplay	☐ Inadequate preparation/planning				
☐ Improper lifting	☐Inadequate support/assistance				
☐Improper loading, placing, mixing	☐ Inadequate ventilation				
☐Improper position/posture for task	☐Inadequate warning system				
Operating at improper speed	Lack of tools, equipment or materials				
☐Using defective equipment	☐Poor housekeeping				
☐Using equipment improperly	⊠Presence of harmful materials				
Other action (Specify)	Radiation exposure				
	☐Uneven ground/terrain				
	Other condition (Specify)				
immediate/Direct Causes (Required)					
Of the above checked immediate/direct causes provide details a	is to which one was the leading cause of the incident.				
Suspected cause or contributing factor: CCGS Bartlett was securing at Victoria Coast Guard Base. Wind setting of the starboard stern towards the jetty. Upon arrival the touched a piling that is standing proud of the jetty face. This toullining panel and joining seams.	starboard stern quarter in way of the laundry room porthole tube				
G. Basic/Root Causes (Required) (Check all that apply)					
Personal Factors	Job Factors				
Emotional stress	Abuse or misuse of equipment				
Fatigue	☐Inadequate engineering or design				
Lack of knowledge and/or skill	☐Inadequate hazard assessment				
Physical stress or capability	☐Inadequate personnel to complete task				
Rushing or inattention	☐Inadequate tools/equipment/materials				
Other (Specify)	☐Inadequate training and/or familiarization				
	Inadequate work standard/procedure				
	Lack of enforcement of procedure or supervision				
	Standards/procedures not developed				
	☐Wear and tear				
	⊠Other (Specify)				
	Ship characteristics combined with weather.				



Basic/Root Causes (Required)

Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident.

See attached excerpt from "CCGS Bartlett Maneuverability Discussion"

- Large sail area aft resulting in an "unbalanced" design affected by minimal cross-winds.

The impact of having a significant sail area fully aft in conditions other than the wind directly ahead results in the transfer of the pivot point of the vessel forward thus producing a larger than expected lever effect.

H. Witnesses (As Required) (NOTE: Witness statements may be required depending on the severity of the incident – Attach all additional information)

Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Mike McCullagh CO	250-882-3864	Christopher Couch Ch/O	250-413-2800
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Matthew Jackson CE	250-882-1273	Joseph Van Der Sande 3rd/O	250-413-2800

I. Property / Equipment Damage (As Required)

Nature and extent of property damage

Abatement contractor clean up of possibly asbestos containing debris. Encapsulation of exposed asbestos in bulkhead lining panels.

Estimated Cost (\$)

1,500\$

J. Corrective & Preventative Measures (Required) (Describe corrective measures taken and/or recommended to prevent recurrence)

Asbestos: Space secured against entry and signs posted. Abatement contractor to be contacted (on the next business day) to clean up debris and encapsulate the exposed asbestos.

Corrective action responsibility assigned to	Date to be com	pleted (YYYY-MM-DD)	Follow-up Date (YYYY-MM-DD)		
Chief Engineer / Marine Engineering	2018-01-30				
K. Investigation Completed By (Required)					
Name of person investigating	Telephone #	Signature			
Matthew Jackson	250-882-1273	Matt Jackson	Digitally signed by Mart Jackson DN cri-Mart Jackson (=Coast Guard ou=Coast Guard, email=BartletCE@cogs-ingot go.ca, e=CA Date: 2018.01.28 16 48 18 -087007		

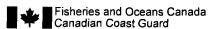
Title Chief Engineer Date (YYYY-MM-DD) 2018-01-28

Email address | BartlettCE@ccgs-ngcc.gc.ca

Investigators comments

Quick action was taken to restrict access to a possibly contaminated space after discovery of the damaged bulkhead lining panels. Plan for clean up and encapsulation in place.





L. Workplace OHS Committee / Health and Safety Representative Participation (Required)							
Workplace OHS Committee Member / Health and Sa	afety	Representative Infor	rma	tion			
Name	Tele	ephone #	Sig	nature			
Chris Couch	250.423.2800 Ch		aric ('allah bi	ptelly signed by Chris Couch i: cm=Chris Couch, o=Canadian Coast Guard, pu=CCGS Bartlett, ad=BartlettChg2cgs=ngcc.gc.cs, c=CA te: 2016.01.28 16.51.00-0800°			
Title	Em	Email address Date (YY)					
Chief Officer	Bar	tlettCHO@ccgs-ngc	c.gc	c.ca	2018-01-28		
Workplace OHS Committee Member/Health and Sa	fety F	Representative com	men	its			
M. Commanding Officer or Superintendent/Manag	ger (l	Required)					
Name of Commanding Officer / Responsible Manag	jer	Telephone #		Signature			
Michael McCullagh		250-882-3864		Michael McCullagh	Digitally signed by Michael McCullagh N on McChael McCullagh on Canadian Coast Guard Fleet, ou=CCGS Bartlett, email-BartlettCO@bar.cogs-rigor.gc.ca, o=CA Date 2018.01.28 17.25 22 -08 00		
Title		Email address			Date (YYYY-MM-DD)		
Commanding Officer		BartlettCO@ccgs-n	gcc.	.gc.ca	2018-01-28		
Has the relevant task(s) on the Site Specific Risk Registe	er bee	en reviewed and/or mo	difie	ed as a result of the incider	nt? Xes No		
Additional comments to include additions, deletions	or ch	nanges to corrective	acti	on recommendations fro	m Section "J"		

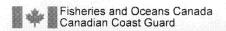
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INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the d	efinition of a reportable Marine ort of a Marine Occurrence form					Regulations,	Section 3(1),
A. Type of Incident (Required)	(Choose only one)						
☐ Disabling Injury (visit to medic	al professional, time lost)		Loss of Conscio	usness due to	electric sh	nock or toxic	atmosphere
☐ First Aid			Near Miss				
Minor Injury (visit to medical professional, no time lost)			Pollution				
☐ Activation of an Emergency Pr	ocedure		Property Damag	e			
Fire or Explosion (Shore only)		\boxtimes	Unsatisfactory C	ondition			
Other (specify)							
B. General Information (Requir	ed)						
Employer's (Department) Name			Site/Vessel Na	me (and offici	al number)	
Canadian Coast Guard			CCGS Bartlett				
Date of Report (YYYY-MM-DD) 2018	N-02-12 Mailing Address	ess	25 Huron Stree	t, Victoria BC	V8V 4V9		
Name of Responsible Supervisor	Captain Mike McCullagh	١	Supervisor's Te	elephone # 2	50.213.368	35	
Organization (Select One)							
		egion	(if selected, cho	ose Directora	te and Pro	gram/Branch	n below)
Regional Directorate (Select One)							
AC's Office Fleet [☐ IBMS ☐ ITS		☐ Incident Ma	nagement	∐ Na	vigational Pr	ograms
Program/Branch (Select One) AtoN	☐ MarSup		950 - J. W. B.	□ Ref	it and Mair	ntenance	
☐ Canso	☐ MCI			□ RO		.toriarioo	
□ canso	☐ MCTS		□ NGC				
☐ E&I	☐ ME		☐ Science				
EFM (C&P)	□ ···= ⊠ MNS		☐ Vessels of Concern				
☐ ER	☐ MSET		☐ Other				
☐ Ice	☐ Ops Busine	ss			eı [
☐ ILS							
C. Employee Data (As Required employee's supervisor or their des				iins an injury).	* To be c	ompleted by	the injured
Surname	Given Name			Initial(s)		Age	
Gender Female Male	Job Title			Years of exp	erience in	current	
Employment Status Indeterminate Term Other (Specify)	☐ Casual/Relie	əf	☐Program Clie	ent ∐Stud	ent	<u></u> Contr	actor

Page 1 of 7



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	*		Fisheries and Oceans Canada Canadian Coast Guard	
	T		Canadian Coast Guard	

D. Incident Information (Required)					
Did this involve a m	otor vehicle* accident		yes, please ensure tl npleted.	ne Motor Vehicle Accider	nt (MVA) Report is
Did this involve Heli	copter Operations?	Yes ☐ No ⊠ Did	this incident involve	Small Craft Operations?	Yes ☐ No ⊠
Location of Inciden	t (include geographic	al name of body of wa	ter, waterway, harbo	our, latitude, longitude if a	applicable)
Juan de Fuca Strai	t - WCVI Transiting N	orth			
Date of Incident (YY		-31	Time of Incident (Local) 15:39	
Body part injured (if	applicable)				
Abdomen	☐ Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin
☐ Arm	☐ Body System / I	nternal 🗌 Foot	☐ Head	☐ Leg	Shoulder
Auditory	☐ Chest	☐ Hand	☐ Hip	☐ Multiple injuries	Unknown
Nature of injury (if k	nown)				
Burns			☐ Multiple Injurie	s	
☐ Fractures			Traumatic join	t/ligament and muscle/te	ndon injury
☐ Injury to Nerves	and Spinal Cord			rations and Amputations	
☐ Intracranial Injur	y		Unknown		
E. Investigation In	formation (Required)			
Type of Event					
Caught in or bet	ween	Exposure to a tr	aumatic event	Slips, trips and fa	ills
Contact with har	mful substance	Mechanical/Equ	ipment Failure	Struck by or agai	nst
Exposure to Elec	ctricity	Mechanism of h	arm unknown	Vehicle incident	
Exposure to Fire	•	Overexertion			
Exposure to hea	t/cold	Repetitive Motio	n	Carlot (opcony)	
Exposure to nois	se			Unknown dust ident Asbestos	ified as containing
1	ent - Sequence of Ev e investigation or pho	•	I sheets, chart(let)s,	diagrams, location of any	y failed or damaged
January 31, 2018 - 1539 Results received from dust samples taken during Wheelhouse Console ACM Wiring Insulation IIR. Test results from the consoles fell in the high range compared with expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories (iATL). In consultation with the RD Fleet, the vessel turned around and returned to Victoria and was secured @ 2350. Additionally results from dust samples taken in the Laundry Room after the cracked ACM bulkhead IIR clean-up fell in the moderate range compared with "experience standards". February 1, 2018 - 0800 Northwest Environmental Group Limited (NWE) and Canadian HAZ-MAT were contacted to attend the vessel to develop a sampling/testing and remediation plan. NWE provided third party oversight of the remediation work and performed the visual and air clearance inspection and documentation. Bulk samples taken from wiring in MCR console due to similar morphology wiring which tested positive in the Wheelhouse. Sample results returned positive for 30% Chrysotile asbestos.					
February 2, 2018 - 1000 NWE on-board to implement Background Asbestos Testing. Background testing was conducted to look for evidence of the spread of asbestos contamination. The test consists of surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether the fibres have been rendered airborne. 1630 the first set of results for the low volume air sampling were received and verbally conveyed by NWE, the results were below the level of detection 0.01f/ml. 1900 sample results conveyed by NWE from the longer running high volume pumps were also below the level of detection 0.01f/ml. NWE developed the Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments. Compartments or spaces included: Wheelhouse including consoles, Void Space below Wheelhouse due to open wire transits to Wheelhouse consoles, Laundry Room, MCR Console and MCR Stbd Stores.					

February 3, 2018 - NWE returned to perform long duration (10 hours) sampling in the same locations. The sample volume must be greater than 1425 liters to qualify the results to a prove the air meets the Air Clearance/Permissible Exposure Limit for continuous occupation of 0.01f/ml. Results received and some samples were above the limit of detection but below the limit of quantitation. NWE: "Sufficient air volume was collected per the method during routine occupation of the vessels and the results are below WorksafeBC exposure limits"

Dust samples to couriered by NWE to iATL February 5, 2018 with quick turn around time of samples of 6 hours ordered. Hold up clearing customs at the border required re-sampling on Feb 8, 2018.

February 4, 2018 - Canadian Haz-mat began work cleaning Wheelhouse consoles with oversight provided by NWE.

February 5, 2018 - Canadian Haz-mat finished work in the Wheelhouse and started and finished work in the Laundry Room. Both spaces passed visual inspection by NWE.

February 6, 2018 - Canadian Haz-mat on-board removing thermocouple extension wire from ER and MCR console. MCR console cleaning started and completed. All unidentifiable packing disposed of through Canadian Hazmat. Stbd MCR cleaning started and completed. NWE air clearance samples from Wheelhouse and Laundry Room passed.

February 7, 2018 - Canadian Haz-mat on-board setup and performing cleaning in Bridge Void Space. Stbd MCR, ER, and MCR passed visuals inspection by NWE. NWE air clearance sampling from MCR and Stbd MCR taken and passed.

February 8, 2018 - Canadian Haz-mat onboard completed cleaning in Bridge Void Space. Space passed visual inspection by NWE. NWE air clearance sample from Bridge Void Space passed. Dust wipe samples retook in ER, MCR, and HVAC as the initial samples were still held up at customs.

February 9, 2018 - NWE on-board performing air sample at sea in the same locations as the background sampling to determine the effect of vessel vibration and movement on the air quality. Sample results received NWE:"We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits.".

Dust sample results received: HVAC return and 3 of 4 samples from ER returned low or none detected. MCR console sample returned "moderate", this was directly below the ACM wire removals. The area was wet wiped after the sample taken. MCR passed air and visual clearance by NWE. As per NWE recommendation, console top was HEPA vacuumed. One sample taken from ER in an inaccessible place returned "elevated". Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: "Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer." Follow up sampling to be conducted upon return to Victoria. Defect entered.

Reports attached:

- -iATL dust wipe samples results
- -NWE air sample test results alongside
- -NWE Limited Hazardous Materials Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments
- -NWE Asbestos Air and Visual Clearance Documents for effected spaces

-NWE air sample test results while underway at sea conditions		
Was a Risk Assessment performed prior to commencement of the task which resulted in the incident?	⊠Yes	□No
Specify		
A risk assessment in conjunction with NWE was performed after finding the asbestos-containing wire insulati Restricting access and sampling the dust was the course of action upon receiving the wire insulation results. console, MCR Stbd Stores and Laundry Room access was restricted upon receiving the results on asbestos materials found.	Void space	
Was accident prevention training provided in relation to the duties of the injured employee prior to the inciden	t? ☐Yes	⊠No



*	Fisheries and Oceans Canada Canadian Coast Guard
T	Canadian Coast Guard

Specify						
F. Immediate/Direct Causes (Required) (Check all that apply)						
Substandard Actions Substandard Conditions						
Bypassing safety devices	Congested or restricted area					
Failure to check or monitor	Defective tools, equipment or materials					
Failure to communicate/coordinate	Excessive noise					
Failure to follow procedure/policy	Heat/cold exposure					
☐ Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE					
Failure to react/correct	☐Inadequate communication					
Failure to service equipment properly	☐Inadequate guards or barriers					
Failure to use PPE	☐Inadequate information/data					
Failure to warn or secure	Inadequate instruction/procedure					
□Horseplay	Inadequate preparation/planning					
☐Improper lifting	☐Inadequate support/assistance					
☐Improper loading, placing, mixing	☐ Inadequate ventilation					
☐ Improper position/posture for task	☐Inadequate warning system					
Operating at improper speed	☐Lack of tools, equipment or materials					
☐Using defective equipment	☐Poor housekeeping					
☐Using equipment improperly						
Other action (Specify)	☐Radiation exposure					
	☐Uneven ground/terrain					
	Weather or environmental conditions					
	☐ Other condition (Specify)					
L. (D) (2						
Immediate/Direct Causes (Required)						
Of the above checked immediate/direct causes provide	details as to which one was the leading cause of the incident.					
	Additional wires of the same morphology as the ACM wires on the bridge of the dust is from pulling asbestos containing cabling throughout the					

+	Fisheries and Oceans Canada Canadian Coast Guard
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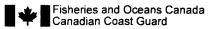
G. Basic/Root Causes (Required) (Check all that apply)							
Personal Factors			Job Factors				
☐Emotional stress			Abuse or misuse of equip	oment			
☐ Fatigue			☐Inadequate engineering or design				
Lack of knowledge and/or skill			⊠Inadequate hazard asses	ssment			
Physical stress or capability			Inadequate personnel to	complete tas	sk		
Rushing or inattention			☐Inadequate tools/equipme	ent/materials	3		
Other (Specify)			☐Inadequate training and/o		tion		
			☐Inadequate work standar				
			Lack of enforcement of p		•		
			Standards/procedures no	t developed			
			☐Wear and tear				
			Other (Specify)				
Basic/Root Causes (Required)	Basic/Root Causes (Required)						
	Of the above checked Basic/Root causes provide details as to which one was the leading cause of the incident. Incomplete identification and abatement of asbestos on-board. Depth and scope of previous Asbestos Surveys did not identify the wiring in these consoles.						
H. Witnesses (As Required) (NOTE: Witnesses)	tness statements r	may be re	equired depending on the severi	ty of the incide	ent – Attach all additional		
Name of Witness # 1	Telephone #		Name of Witness # 3		Telephone #		
Matthew Jackson CE	250-882-1273		Steve Buss SE		250-213-3685		
Name of Witness # 2	Telephone #		Name of Witness # 4		Telephone #		
Mike McCullagh CO	250-882-3864						
I. Property / Equipment Damage (As R	Required)						
Nature and extent of property damage					Estimated Cost (\$)		
J. Corrective & Preventative Measures recurrence) Future Asbestos Management Surveys	to include on-bo	ard air s	ampling and dust wipe samp	les.			
As per NWE recommendation future work inside Wheelhouse and MCR consoles and Wheelhouse Void to be considered asbestos work due difficultly of removing all the dust for the wiring, terminal strips, circuit boards/components, cloth wrap on wiring and bronze braid on the electrical cables. Work outside of normally accessed spaces/equipment may encounter the possibility of asbestos debris and be considered in the risk assessment prior to starting work. Vessel Specific Asbestos Management plan and labels updated to cover findings during the investigation. Upon return to Victoria additional dust sampling to be conducted in the ER/AMS as per NWE recommendations. Training arranged for 5 crew members for Asbestos Awareness and Abatement on February 22/23.							
Corrective action responsibility assigned	d to	Date to	be completed (YYYY-MM-DD)	Follow-up [Date (YYYY-MM-DD)		
Chief Engineer/Marine Engineering							
		<u> </u>					

-	■ Fisheries and Oceans Canada
	Fisheries and Oceans Canada Canadian Coast Guard

K. Investigation	n Completed By (Required)						
Name of persor	Telephone # Signature						
Matthew Jacks	on	250-882-1273		Matt Jacksor	Dig DN em Dai	Digitally signed by Matt Jackson DN on=Matt Jackson b=Coast Guard ou=Coast Guard emat=BartletCE @cogs-npcc gc.ca c=CA Date 2018.02.13.08.37.47-08'00'	
Title Chief Eng	ineer		Date (YYY)	/-MM-DD)	13/2/2	017	
Email address	BartlettCE@ccgs-ngcc.gc.ca						
Investigators co	omments						
developed. Future Asbesto Bulk sampling f	the anticipated service life of the Bart s Management Surveys to include re frequency and scope to be increased bling plan was developed with NWE, status.	egular air and to further id	d dust sampl entify/clear a	ing. ireas on-board of A0	CM.	·	
L. Workplace OHS Committee / Health and Safety Representative Participation (Required)							
Workplace OHS	Committee Member / Health and Sa	fety Repres	entative Info	rmation			
Name		Telephone		Signature	Dec	itally signed by Steve Buss	
Steve Buss		250-213-36	885	Steve Buss	DN em Dat	our Steve Buss, or Canadian Coast Guard, our DFO, our DFO	
Title		Email address				Date (YYYY-MM-DD)	
Senior Enginee	r	BartlettSE@ccgs-ngcc.gc		gc.ca	ıc.ca		
Workplace OHS	Committee Member/Health and Sa	fety Represe	entative com	ments			
	uture testing to ensure the health and			ers in the future.			
Name of Comm	anding Officer / Responsible Manag	er Teleph	one #	Signature			
Michael McCull	agh	250-88	2-3864	Michael McC	ullagh	Digitally signed by Nichael McCullagh DN cn=Michael McCullagh on Canadian Coast Guard Fleet ou=CGGS Bartfett email=BartfettCO@bar.cogs.ngcc.gc.ca c=CA Date 2018.02.13.09.15.5308.00*	
Title		Email a	ıddress	1		Date (YYYY-MM-DD)	
Commanding C	fficer	Bartlett	CO@ccgs-n	gcc.gc.ca		2018-02-13	
Has the relevant t	ask(s) on the Site Specific Risk Registe	r been reviev	ved and/or mo	odified as a result of th	ne incider	nt? Xes No	
Additional comr	nents to include additions, deletions	or changes t	o corrective	action recommenda	tions fro	m Section "J"	
Concur with corrective and preventative measures adopted, and the heightened awareness and vigilance with regard to ACM containing work spaces.							

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The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



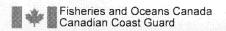
the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the <u>Privacy Act</u> and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: <u>DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca</u>.





INCIDENT INVESTIGATION REPORT (IIR)

9.B.1

NOTE: If this incident falls under the definition of a reportable Ma a Report of a Marine Occurrence					3) Regulations,	Section 3(1),
A. Type of Incident (Required) (Choose only one)						
Disabling Injury (visit to medical professional, time I	ost)	Loss of Conscio	usness due t	o electric s	shock or toxic	atmosphere
First Aid		Near Miss				
☐ Minor Injury (visit to medical professional, no time le	Pollution					
☐ Activation of an Emergency Procedure	е					
Fire or Explosion (Shore only)	\boxtimes	Unsatisfactory C	ondition			
Other (specify)						
B. General Information (Required)						
Employer's (Department) Name		Site/Vessel Na	me (and offic	cial numbe	r)	
Canadian Coast Guard		CCGS Bartlett				
Date of Report (YYYY-MM-DD) 2018-01-28 Mailing A	ddress	25 Huron Stree	t Victoria BC	V8V 4V9		
Name of Responsible Supervisor Matthew Jackson		Supervisor's Te	elephone # 2	250-882-12	?73	
Organization (Select One)						
	Region	(if selected, cho	ose Director	ate and Pr	ogram/Brancl	n below)
Regional Directorate (Select One)		· · · · · · · · · · · · · · · · · · ·				
☐ AC's Office ☐ Fleet ☐ IBMS ☐ IT	5	Incident Ma	nagement	Na	avigational Pr	ograms
Program/Branch (Select One) AtoN MarSup			⊠ Re	fit and Ma	intenance	
Canso MCI			□RC			
□ cgss □ mcts			☐ Kee			
□ E&I □ ME			☐ Science			
☐ EFM (C&P) ☐ MNS			☐ Vessels of Concern			
□ ER □ MSET			☐ Other			
☐ Ice ☐ Ops Bu	siness		OI	ilei		
□ILS						
C. Employee Data (As Required) * (to be completed employee's supervisor or their designate. All fields sha			iins an injury). * To be (completed by	the injured
Surname Given Name			Initial(s)		Age	
Gender Job Title Female Male			Years of ex position	perience in	n current	
Employment Status Indeterminate Term Casual/F Other (Specify)	Relief	□Program Clie	ent	dent	Contr	ractor



Fisheries and Oceans Canada Canadian Coast Guard				
D. Incident Information (Required)				
Did this involve a motor vehicle* accident?		yes, please ensure t mpleted.	he <u>Motor Vehicle Accid</u>	ent (MVA) Report is
Did this involve Helicopter Operations?	Yes ☐ No ⊠ Die	d this incident involve	Small Craft Operation	s? Yes ☐ No 🗵
Location of Incident (include geographical	name of body of wa	ater, waterway, harbo	our, latitude, longitude i	f applicable)
Alongside Victoria Coast Guard Base Ref	it Period			
Date of Incident (YYYY-MM-DD) 2018-01-	24	Time of Incident (Local) 1600	
Body part injured (if applicable)				
Abdomen Back	☐ Eye	☐ Neck	☐ Knee	Pelvis / Groin
☐ Arm ☐ Body System / In	ternal 🗌 Foot	☐ Head	Leg	Shoulder
Auditory Chest	☐ Hand	☐ Hip		Unknown
Nature of injury (if known)				
Burns		Multiple Injurie	es .	
☐ Fractures		☐ Traumatic join	t/ligament and muscle/t	endon injury
☐ Injury to Nerves and Spinal Cord ☐ Wounds, Lacerations and Amputations				ıs
Intracranial Injury		Unknown		
E. Investigation Information (Required)				
Type of Event				
Caught in or between	Exposure to a t	raumatic event	Slips, trips and	falls
Contact with harmful substance	☐ Mechanical/Equ	uipment Failure	Struck by or aga	ainst
Exposure to Electricity	☐ Mechanism of h	narm unknown	Vehicle incident	1
Exposure to Fire	Overexertion		Other (specify)	
Exposure to heat/cold	Repetitive Motion	on		
Exposure to noise				
Description of Incident - Sequence of Ever parts relevant to the investigation or photo		al sheets, chart(let)s,	diagrams, location of a	ny failed or damaged
January 22, 2018 - Electrical wire and insistarboard Control Console to be tested for January 24, 2018 - Asbestos test results in Asbestos (70%). The insulation tested por Recommendation from Northwest Environ be asbestos containing until samples were January 26, 2018 - Northwest Environment insulation test results with the Project Marris a good indication the dust may not contain the greatest concern in the shedding asbeshows wire wrap in good overall condition hour turnaround) requested on test results See attached photo of the wiring taken dutop wires in the bottom terminal strip are the	r asbestos. ecceived, two of the sitive while the wire mental was to restrict tested. Ital returned to take ager from Northwestain asbestos, as characteristics. Visual in Samples couriereds. Results expected ring dust sampling.	seven samples wire s wrap (jacket) tested ct access to location dust samples from the st Environmental, the affing wire wraps which aspection of asbesto d to a laboratory in N January 30, 2018. Note the black wires	samples returned positionegative. See attached and consider any dust the two consoles. Discurnegative result of asbetch contain asbestos dustont as a secontaining wiring during wiring during deriversely for analysis and connected in the formation of the secondarian secondarian asbetch connected in the formation of the secondarian secondaria	ve for Chrysotile d pdf of test results. inside the console to ssing the wire estos in the wire wrap e to vibration would be ng dust sampling with a rush order (6-

Specify

_	بغد	-	Fisheries Canadian	and	Occare	Canada
	-		i isilelles	anu	Oceans	Carraga
	•		Canadian	000	at Cuar	
	T		Canadian		ist Guard	

O:f.						
Specify						
. Immediate/Direct Causes (Required) (Check all	that apply)					
Substandard Actions	Substandard Conditions					
Bypassing safety devices	Congested or restricted area					
Failure to check or monitor	Defective tools, equipment or materials					
Failure to communicate/coordinate	Excessive noise					
Failure to follow procedure/policy	☐Heat/cold exposure					
Failure to identify hazard/risk Inadequate/improper PPE or use of PPE						
Failure to react/correct						
Failure to service equipment properly						
ailure to use PPE						
Failure to warn or secure	cure Inadequate instruction/procedure					
]Horseplay	☐Inadequate preparation/planning					
Improper lifting	☐Inadequate support/assistance					
Improper loading, placing, mixing	☐Inadequate ventilation					
Improper position/posture for task	☐Inadequate warning system					
Operating at improper speed	Lack of tools, equipment or materials					
Using defective equipment	Poor housekeeping					
Using equipment improperly						
Other action (Specify)	Radiation exposure					
	Uneven ground/terrain					
	Weather or environmental conditions					
	Other condition (Specify)					
nmediate/Direct Causes (Required)						
	ide details as to which one was the leading cause of the incident.					
	vessel construction. The asbestos insulated wire makes up part of the ed with a cloth wrap or PVC insulated. The wiring in the Bridge consoles in.					

Page 3 of 6

*		Fisheries and Oceans	Canada
Ŧ	۲	Canadian Coast Guar	d

G. Basic/Root Causes (Required) (Check all that apply)							
Personal Factors		Job Factors					
Emotional stress			☐Abuse or misuse of equipment				
Fatigue			Inadequate engineering	_			
Lack of knowledge and/or skill			Inadequate hazard asses				
Physical stress or capability			Inadequate personnel to	•			
Rushing or inattention			Inadequate tools/equipm				
Other (Specify)			Inadequate training and/				
	_		Inadequate work standar Lack of enforcement of p	•			
			Standards/procedures no		•		
			Wear and tear	or developed			
			⊠Other (Specify)				
			Incomplete identification ar	nd abatemen	t of hazardous		
			materials onboard				
Basic/Root Causes (Required)							
Of the above checked Basic/Root cause Electrical insulation on wires installed of Surveys. Asbestos-containing wiring corubber jacketed bronze armored cables.	itside of high he nnects via termi	at location	on had been overlooked in pi s to rubber insulated cloth wr	revious Asberapped wires	estos Management which are part of		
H. Witnesses (As Required) (NOTE: Witnesses)	tness statements	may be re	equired depending on the severi	ty of the incide	ent – Attach all additional		
Name of Witness # 1	Telephone #		Name of Witness # 3		Telephone #		
Matthew Jackson C/E	250-882-1273						
Name of Witness # 2	Telephone #		Name of Witness # 4		Telephone #		
Steve Buss S/E	250-882-1273						
I. Property / Equipment Damage (As R	(equired)						
Nature and extent of property damage					Estimated Cost (\$)		
J. Corrective & Preventative Measures recurrence)	(Required) (D	escribe o	corrective measures taken ar	nd/or recomn	nended to prevent		
Currently awaiting test results of dust from consoles. Plan for abatement of dust and wiring to be determined based on results. Results expected January 30, 2018. Extensive work on the bridge consoles would be required if wiring is to be replaced.							
Corrective action responsibility assigned	d to	Date to	be completed (YYYY-MM-DD)	Follow-up [Date (YYYY-MM-DD)		
Chief Engineer/Vessel Maintenance Ma	nager	ASAP					

	Fisheries and Oceans Canada
7	Canadian Coast Guard

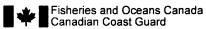
K. Investigation Completed By (Required)							
Name of person investigating	Telephone	#	Signature				
Matthew Jackson	250-882-1273		Matt Jacksor	Dig DN em De	plaify signed by Natt Jackson ton-Matt Jackson o≂Coase Guard ou≭Coast Guard darle BartlerCEGeops-rigot gc.ca. c=CA te. 2018.01.27 10.52.32 -0800°		
Title Chief Engineer		Date (YYYY	-MM-DD)	2018-0)1-27		
Email address BartlettCE@ccgs-ngcc.gc.ca							
Investigators comments							
Surprising positive test result for asbestos in an application that would not benefit from the once thought of advantages of using this mineral. Wire and wire wrap (jacket) look to be in good condition. Awaiting test results of the surrounding dust to make decision on course of action.							
L. Workplace OHS Committee / Health and Safety	Represent	ative Partici _l	pation (Required)				
Workplace OHS Committee Member / Health and Sa	fety Repres	entative Infor	mation				
Name	Telephone	#	Signature				
Chris Couch	250.213.36	85	Chris Couch	DN	italiy signed by Chins Couch cm=Chins Couch, o=Canadian Coast Guard, ou=CCGS Bartlett sil=BartlettCHO@cogs-ngcc gc.ce, o=CA te 2018,01:28 10.04 56 -08'00'		
Title	Email addr	ess			Date (YYYY-MM-DD)		
Chief Officer	BartlettCH	BartlettCHO@ccgs-ngcc.gc.ca			2018-01-28		
Workplace OHS Committee Member/Health and Sa	fety Represe	entative comr	nents		<u> </u>		
During this patrol's OHS Meeting, we will review the Safety Manual - Asbestos Containing Materials (7.A.10) to remind everyone of asbestos containing materials (ACM). We will also review the ship's Asbestos Management Plan (AMP). Concur with this report, and nothing further to add.							
M. Commanding Officer or Superintendent/Manag	ger (Require	ed)					
Name of Commanding Officer / Responsible Manag	er Teleph	one #	Signature				
Michael McCullagh	250-88	2-3864	Michael Mc	Cullagh	Digitally signed by Michael McCullagh DN on-Michael McCullagh on Cahadian Coast Guard Fleet ou+CCGS Bartett, email=BartettCO@bar oxps-rigoc gc ca. c=CA Date. 2018;01:28:10:09.41-0800°		
Title	Email a	ddress			Date (YYYY-MM-DD)		
Commanding Officer	Bartlett	BartlettCO@ccgs-ngcc.gc.ca 2018-01-28					
Has the relevant task(s) on the Site Specific Risk Registe	r been reviev	ved and/or mo	dified as a result of t	he incider	nt? ⊠Yes □No		
Additional comments to include additions, deletions	or changes	o corrective	action recommenda	ations fro	m Section "J"		
Asbestos Management plan updated to reflect ACM in bridge consuls. Concur with proposed Corrective & Preventative Measures.							

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Page 5 of 6





the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

March-10-18 8:16 AM

To:

'George Kohorst'

Cc:

CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin

Gabrie

Subject:

RE: Bartlett - Deutch Connector Crimp Tool & Connector Kit

Good Morning George,

Could you please bill us for these tools.

PS: Are you guys considering having any of your workers taking an asbestos awareness & abatement training in preparation for May-June Refit? Gabe in involved in arranging some training for the CG Electronics staff, and considering that you do so much work for us, he <u>may</u> pay to train your workers (2 days duration).

Many thanks ©

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

Bartlett CE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: George Kohorst [mailto:kohoconsulting@shaw.ca]

Sent: February-26-18 6:52 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: Chaikin Gabriel

Subject: Re: Bartlett - Deutch Connector Crimp Tool & Connector Kit

Good Morning Ross

Great timing on the Deutsch connector kit. The last parts I was waiting for came last week and I had just finished putting the kit together yesterday probably about ten minutes before your email. It includes 2,3,4,and 6 pin sets, both sized contacts, and the crimpers. I will be out at IOS today and will bring it with me. I can drop it off to be shipped to the Bartlett. I am still waiting for the CAT5E connectors to come in.

I will be in touch as soon as I get the CAT 5 ends and make arrangements then. I still have to put together the invoice so may be a few days before I send it out for the connector kit.

I hope that your cook made his flight OK. By chance I was at the gate when he was looking for a ride.

Be in touch soon George Kohorst 250 881-2901 kohoconsulting@shaw.ca



On Feb 25, 2018, at 12:33 PM, CCGS-NGCC, Bartlett Chief Engineer < BartlettCE@ccgs-ngcc.gc.ca> wrote:

Good Day George,

- 1. I've been led to believe that you supplied us with a Deutch Connector Crimping Tool last month. Did we pay you for that?
- 2. Are you willing & able to put together an assortment of Deutch connectors for us?
- 3. Following up on the asbestos sampling we did at the end of the Refit, we found asbestos dust & asbestos wiring in bridge & MCR consoles. So you may want to consult North West Environmental regarding training on how to deal with that in the future, and/or you may want to talk to Gabe (*taking over from Cody) regarding getting on the next Coast Guard Asbestos Awareness & Abatement Training.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell: 1

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:	CCGS-NGCC, Bartlett Chief Engineer
Sent:	March 12, 2018 9:39 AM
To:	CCGS-NGCC, Bartlett Captain
Cc:	CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; Chaikin
	Gabriel; McMillan Cody
Subject	FW: ACM Flectronic Consoles in Wheelhouse & Engine room

Capt.

Well that answers that question. Any & all future work done in the W/H & ER consoles (where ACM was discovered last month) shall always be require Moderate-Risk Asbestos Abatement procedures to be used, and all workers must be trained in abatement procedures – unless the consoles get fully rewired, (massive jobs & massive expense).

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: March-12-18 8:25 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: Joel Shandro; Grant Rogers; Julie Scott-Moncrieff

Subject: RE: ACM Electronic Consoles in Wheelhouse & Engine room

Hi Ross, please see our responses in black below. I hope this provides some clarity. Please let me know if you need anything else.

Best,

Project Manager

North West Envronmental Group Ltd.

Cell: (primary)
Office: 250-384-9695 ext

201 – 415 Gorge Road East Victoria, BC V8T 2W1

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: March 8, 2018 6:41 PM

To:

Cc: CCGS-NGCC, Bartlett Captain < <u>BartlettCO@ccgs-ngcc.gc.ca</u>>; Chaikin Gabriel < <u>Gabriel.Chaikin@dfo-mpo.gc.ca</u>>; CCGS-NGCC, Bartlett Senior Engineer < <u>BartlettSE@ccgs-ngcc.gc.ca</u>>; Wallace Dustin < <u>Dustin.Wallace@dfo-mpo.gc.ca</u>>;

CCGS-NGCC, Bartlett Chief Officer < <u>BartlettCHO@ccgs-ngcc.gc.ca</u>>

Subject: ACM Electronic Consoles in Wheelhouse & Engine room

Importance: High

Good Day ,

For the purpose of being clear on how the Bartlett performs electrical and electronic maintenance & servicing in the Wheelhouse and the Engineroom from now on, please confirm my understanding of the following paragraph from the attached 10 Feb 2018 report:

"NOTE 2: Consoles are not free of asbestos-containing materials or dust. Asbestos-containing cables are still present. Canadian Coast Guard (CCG) or their subcontractors must implement asbestos controls when working in the consoles. At minimum, all half-face air purifying respirator, certified HEPA vacuum, disposable coveralls, barrier tape, drop sheets, and a method of worker (de?) contamination must be used."

Additionally, I'm reasonably sure that I read another document that indicated that air sampling was required when work was conducted in any of the electronic consoles where asbestos was recently identified. And I'm quite sure that means that access to the area would be restricted to haz-mat personnel until an air Clearance Document has been received. Are these your recommendations? [NWest] We have provided an air clearance document for the Wheelhouse (sent to Matt, we can resend if required). Any further work by any worker in the consoles would have to be done following moderate risk procedures (half-face mask, HEPA vacuum, drop sheets, barrier tape, suit, asbestos training etc.). Additional air clearance, ambient, or occupational sampling would not be required as we found the result of these samples collected during abatement (directly impacting the dust) to be within regulatory limits. The use of compressed air is not permitted.

And I think that in accordance with WorkSafeBC regulations, any contractors working within any of the electronic consoles where ACMs have been detected must be professionally trained in the proper handling & abatement of ACMs (or perhaps just work under the guidance of a Hazardous Materials consultant such as yourself). [NWest] See comment above.

Ideally we would like to seal up these consoles that are known to contain asbestos dust, but the console vents in most cases are required for cooling the electronics. [NWest] This is a valid concern. The majority of loosely adhered dust was removed, however, not all areas were accessible without removing cables, and cables themselves were not pulled apart from each other to remove dust caught between them. The likelihood of fibres becoming airborne from the remaining dust is low, however, it does exist.

- 1. What do you think about performing an aggressive clean up job in the consoles, such as negative pressure venting and using compressed air to stir up & blow out all remaining ACM dust from consoles? [NWest] We don't recommend the cleaning described in the last statement for three reasons:
 - a. Pressurized air is not permitted by WorkSafeBC as a method of removing asbestos-containing materials.
 - b. The abatement contractor removed the majority of loosely adhered dusts so there is little risk of remaining dust becoming airborne to a concentration above WorkSafe limits (note: this is not a zero risk).
 - c. Unless the CCG are doing a lot of work in the consoles, the abatement cost of going after all the dust may not be a priority (obviously, this is the decision of the CCG). Depending on upcoming refit work, it may be better to do a full abatement when/if the consoles will be stripped of cables and other interference items.

Regards,

Ross McKenzie
Chief Engineer, CCGS Bartlett

Document Released Under the Access to \$-16(4) ration Act / Document divulgué en vertue \$49(1) of sur l'accès à l'information

Cell: BartlettCE@bar.ccgs-ngcc.gc.ca BartlettChief@gmail.com for files above 5 MB
From: CCGS-NGCC, Bartlett Chief Engineer Sent: March-02-18 3:21 PM To: Subject: RE: ACM Reporting Re: Parameters, Limits, Thresholds, and Questions
Hi
Oh yes, of course. Sorry for making an inquiry on Friday afternoon, (I'm in the habit of dealing with issues as they arise, and it gives the other cc'd parties some data to consider). Hopefully you need not give this inquiry any thought over the weekend, and feel free to discuss or cc the inquiry with anyone else that you think should be in the loop.
Regards,
Ross McKenzie Chief Engineer, CCGS Bartlett Cell: BartlettCE@bar.ccgs-ngcc.gc.ca BartlettChief@gmail.com for files above 5 MB
From: Sent: March-02-18 2:39 PM To: CCGS-NGCC, Bartlett Chief Engineer Cc: Joel Shandro; Julie Scott-Moncrieff Subject: RE: ACM Reporting Re: Parameters, Limits, Thresholds, and Questions
Hi Ross, we will review and respond. Is a response by Wednesday next week okay? Best,
North West Envronmental Group Ltd.
Cell: (primary) Office: 250-384-9695 ext 201 – 415 Gorge Road East Victoria, BC V8T 2W1
From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca] Sent: March 2, 2018 2:25 PM To: Cc: Chaikin Gabriel < Gabriel.Chaikin@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain < BartlettCO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Senior Engineer < BartlettSE@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Logistics Officer < BartlettLO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Cho@ccgs-ngcc.gc.ca> Subject: ACM Reporting Re: Parameters, Limits, Thresholds, and Questions Importance: High

Please consider responding to the attached document in terms of:

Good Day

- Correcting or refining my understanding where mistaken, and
- Addressing the questions to extent possible.

The report data is extensive, and I'd like to ensure that I am interpreting it correctly.

In light of the recent findings & abatement processes, I expect that future testing will include the following: although I've not yet discussed the details with the Captain, or the DPA - Designated (Safety) person Ashore.

- Dust sampling above deckhead panels, particularly in accommodation (and air sampling in Supply Officer's
 Office → where above deckhead space is open to the office).
- Dust sampling above wireways, both above deckhead panels and open wireways in Engine Room and throughout the ship.
- Electronics / Radio Room
- More testing while underway in rough water conditions in work spaces and cabins, for 12 hour durations, in
 particular aft Oilers cabin & Supply Officers cabins, and in "Upper Deck" spaces where less of the ACM bulkhead
 panels have been removed → more vibration & ship flexing → ACM bulkheads chafing-rubbing.

Please also note that we expect that this is billable time.

Many Thanks ☺

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell: 1

<u>BartlettCE@bar.ccgs-ngcc.gc.ca</u> BartlettChief@gmail.com for files above 5 MB

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

ent:

March-21-18 10:15 AM

To:

Subject:

Cc:

Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer

CCGS Bartlett - ACM Testing Follow-up

Follow Up Flag:

FollowUp

Flag Status:

Flagged

Good Day

Re: Following Up with ACM testing.

Scott Ware will be working as Chief Engineer on Bartlett for next 4 weeks as of noon today. (And the ship is in Port Hardy.)

He may want to follow up with some additional ACM sampling when the Bartlett gets into IOS, Pat Bay, Sidney in 2 weeks' time. We were thinking of starting with redoing dust swipes in wheelhouse fire panel console and MCR console, (to confirm that recent abatement was somewhat successful), as well as some air sampling adjacent to fire panel wheelhouse console vent louvers.

We were also hoping to get some air monitoring-testing machines from Gabe Chaikin to perform some more extensive testing at sea. Do you think that we'd need any amount of training with the machines in order to take reliable samples? Same for dust swipes – Can we get dust swipe kits? And for regular ACM sampling, after we'd had the training, presumably can we just use regular zip lock baggies appropriately labelled.

There are a number of other areas we like to perform dust swipes, including above deckhead (ceiling) panels, the Radio / Electronics Room and the Gym for starters.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

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Pages 887 to / à 888 are duplicates of sont des duplicatas des pages 922 to / à 923

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

Sent:

March-28-18 3:31 PM

To:

Chaikin Gabriel

Cc:

Subject:

Bartlett Telecon Summary and Notes - March 28

Attachments:

CCGS Bartlett - ACM Testing Follow-up

Hi Gabriel, a summary and additional notes from today's telecon with the Bartlett Captain and Engineers.

1. Training:

- a. I'll follow up with regarding any potentially outstanding certificates for recently trained crew.
- b. We can provide the following training: asbestos awareness, asbestos abatement, lead and silica awareness, respirator use and maintenance. Your site or our office.
- c. I recommend that a few crew members from each shift/rotation have abatement training.
- d. We can provide safe work procedures for consoles and other work impacting asbestos containing materials (ACM).
- e. We can provide air sampling training.
- f. Your Exposure Control Plan/Asbestos Management may need updating to include recent findings. We have updated the Asbestos Management Plan for the Dumit and Eckaloo in the past.

2. Consoles:

- a. If cables are coated with an elastomeric coating, there will still be asbestos fibres in latent dust on inaccessible surfaces within the consoles, however, coating should help to reduce the amount of new fibres being released due to handling.
- b. If a spray encapsulant is used, the space should be placed under negative pressure as it may cause a release of fibres. Spray must not be pointed at dusty surfaces and cables should be vacuumed first to remove loose material.
- c. Cables are old there may be issues with excessive handling/encapsulation.
- d. Any console work will be moderate risk. Depending on the work activities, additional controls may be required (e.g. mini enclosure under negative pressure).
- 3. Additional wipe and air sampling (per Ross' email, attached)
 - a. Since the consoles were not fully abated and there is still ACM present, I don't see the benefit in collecting surface wipe samples, as they will likely show asbestos present, which is expected.
 - b. Unless there has been some work or damage to the vessel, I don't see the need for additional air sampling at this time. The Captain confirmed no such work or damage.

4. Pumps:

- a. We would be happy to do a review of the pumps you are looking at purchasing to ensure they would meet sampling needs (e.g. able to achieve flow rates suitable for TEM testing).
- b. We can also provide calibration services for rotameters, provide sampling media, or whole pump packages (i.e. procurement, maintenance, calibration, storage). Let me know if you're interested.

The vessel will be in Victoria April 9-11. No sampling has been requested at this time. Please let me know if you have any questions. Best,



Project Manager
North West Environmental Group Ltd.

P. 250-384-9695 ext.

F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

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No information has been removed or severed from this page

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: April 20, 2018 12:35 PM **To:** McMillan Cody; Chaikin Gabriel

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC,

Bartlett Chief Officer

Subject: FW: Refit Potential ACM Projects - Notifier Fire Panel Relocation

Attachments: 2018 - May-June SR Worklist Ver.5_RM - ACM Pre-Work Materials Hazardous

Assessment required.doc

Importance: High

Cody & Gabe,

One job in particular that I should have mentioned is the "Relocation" of the Bridge Notifier Fire Panel:

nas asked United Engineering to fabricate an insert for the wheelhouse console. After Viking approves on fitting of the insert into the console (which is technically a CCR – my concern is that it will not permit sufficient cooling air flow), then it will involve medium risk asbestos work to remove the fire panel, install the insert, and reinstall the fire panel. The panel has offered to do this work. I expect that KOHO George will be OK with this job also, but I expect that Viking will not even want to be involved with the annual fire detection system inspection if it involves asbestos work. This relocation of Fire Panel will be required before we can schedule the annual inspection.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: April-20-18 11:30 AM

To: McMillan Cody; Chaikin Gabriel

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer

Subject: FW: Refit Potential ACM Projects

Importance: High

Hi Cody & Gabe,

2 points regarding asbestos in upcoming refit;

1. I think that we should be giving NWest asbestos consultant the heads up that we will be requiring her services for the upcoming Refit. There are many intricacies with Medium to High Risk asbestos work that we are not used to dealing with, starting with Notice of Project, and ending with Clearance documentation. The requirements & procedures for air sampling is the biggest grey area, and I expect that extensive training is required to have this subject cased. But as I previously stated, we will eventually come up against the LDV limit for this work, and that will be a problem.

Docume **\$16(2)** eased Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

2. There are many jobs that will require pre-sampling for Refit, and I will document these in a near future correspondence. I've not read the PSPC Spec in detail, but I suspect that contractor has been given reasonable warning that ACM could be encountered under diverse condition, including the breaker panels during Megger Survey.

Over the next few days I will complete list of other contracts that I think we should be setting up.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: March-01-18 1:33 PM

To: McMillan Cody

Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer

Subject: Refit Potential ACM Projects

Hi Cody,

You've probably already got you own list, but I thought I'd just forward a list of jobs where we may benefit from Pre-Work Hazardous Materials Assessment prior to Refit if possible.

Of course it is more likely that the required equipment will have to be opened up in the days leading up to refit or on the first several days.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



				SELF REFIT	WORK LIST	DRAFT - VER.5	
2				LOCATION:		VICTORIA COAST GUARD BASE	
		CGS	CCGS BARTLETT	WORK PERIOD START		2018-MAY-16	
				WORK PERIOD END		2018-JUNE-27	
Status	Funding		Report Comments	: This draft is a cleaned up ver	rsion of cut &	s : This draft is a cleaned up version of cut & paste job from previous Refits.	
		Š	Regulatory – Annu De	nual unless otherwise noted Description	Resource	Comments	
	Xee	7 -7-3	Annual lest of Fire Detection Panel -note main Fire Detection control pane console which contains Asbestos wirin efforts NWE precautions in Clearance followed during testingask Viking on work required to relocat the console	Annual lest of Fire Detection Panel -note main Fire Detection control panel is located inside the console which contains Asbestos wiring. Despite abatement efforts NWE precautions in Clearance documents to be followed during testingask Viking on work required to relocate this panel outside of the console.	الإ الا		
			-magnetic hold-back in the diode. Without this diode the hold-back is pressed if detection display panel. It Bridge panel displaying fa should be looked into.	-magnetic hold-back in the MCR is wired with a flyback diode. Without this diode when the manual close button on the hold-back is pressed it resets the MCR secondary fire detection display panel. It has caused errors on the main Bridge panel displaying fault LCD80. An alternate 24VDC should be looked into.			
			-hold back in focl'sle replace with 120VAC and test.	ce with 120VAC and test.			
Planned	Refit	R-22	3EE010 Electrical System Insulation Test Survey *** Shall include Terminal Tightness checks of accessed equipment as an application of CC 2016-13 Electrical Termination Maintenance. 12/04/2017 Edward email.***	3EE010 Electrical System Insulation Test - Megger Survey *** Shall include Terminal Tightness checks on all opened / accessed equipment as an application of CCG Tech Bulletin 2016-13 Electrical Termination Maintenance. See	Contract / Fleet Electrician		
Planned	Refit	R-28	Asbestos Management Plan Risk Asses: Survey and HEPA Vacuum Rectification Samples/Areas for Asbestos Testing:	Plan Risk Assessment Re- num Rectification stos Testing:	Marine Engineering- NorthWest Environment	Samples to be taken and tested ASAP to ensure sufficient time if abatement is required.	a
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70									
-ER ventilation (cloth covering over fibred insulation)	-Electrical wiring samples	-MCC grey connection wire from cells to terminal strips at top of MCC	-Windlass MG Set/Windlass	-Windlass Drum Starter controls	-Dust samples based on any positive results. Continue dust sampling to include additional spaces.	Air Sampling?	Thorough inspection of all cabins and workspaces with ACM bulkheads to look for damage/unencapsulated joints and	seams.	Repeat Locations from last reports:
)								

			Engineering		
		ģ	Description	Resource	Comments
	Rem	E-25	Main Seawater Piping -continue replacement of SS piping within LDV contract.	United	Older Piping gaskets ACM?
	Ž Ž	щ Б	ER Ventilation Ducting Cleaning / Inspection / Replacement -at minimum have ducts cleaned professionally.	Contract / www.Superste amteam.ca	
			-inspect, measure, and identify the worst section for replacement -replace ducting JB sheet metal used for duct replacement on the Reid with good results.		
			-Mostly corrosion and dirt. Vibration can loosen and blow out into ER at face level.		
		E-32	Accommodation HVAC Ducting Cleaning & Inspection Ask for before & after photos	Contract	OHS: Ship's Crew concerned about dirt in ducting, (I think we should be
			Get mold testing performed before cleaning by NEW, (ensure than Air Cond in use the week prior to test → condensation). R.M. (large quantities of water are known to be distributed throughout ducting when A/C is on — melted evaporator frost)		extent of ducting moisture from A/C. RM.) Should not remove deckhead panels without ACM precautions.
Planned	Refit	E-37	Stbd MCR Stores Deck Coating Repair.		
			-Stbd MCR Stores deck coating in poor condition (rust and scale). To be descaled, prepped and painted.		

Page 3 of 111

And NWE to do "Pre-Work Assessment" and the "Clearance Document", (being that they are always updating our Annual ACM Survey / Insulation Report.) LGF Recommended as local ACM removal experts. RM.	Purchase new valve(s) and do maintenance while operational. We could also disconnect hose and pressurize fire main → if no leaks then valves are fine → no lapping necessary. RM. Quote for new 2" and 2 ½" valves received from Wolseley Industrial Canada Inc. via email 03/01/2018 no order made yet. RNM Gaskets ACM?		Inspection of bushings, bearings caps, shaft and gears, so that we know to what extent we're going to overhaul the windlass in the May-Jun Refit is underway. RNM
Contract	At Sea	Contract	United Engineering
ACM – Asbestos Work Refer to CE H/O 17-04 12-07-2017 Notes Two pipes in the AMS have been identified as possibly containing ACM. One is an unused pipe penetration above the work bench. The other passes transversely below the deck plates just aft of the AMS/ER bulkhead. Both have white/crumbly insulation beneath the lagging cloth. The pipe penetration has been sealed with poly and tape as it is above the work bench and a possible source of contamination if disturbed. The pipe in the bilge has mostly been encapsulated with the Interbond 998 paintjob in DD. Both should be removed in the next SR period or in Training Week. Other ACM Work: Upper Deck Trunking above sewage Plant, fwd of steps to Galley.	Fire Station Valve Maintenance -MAINTelligence PM for 5 year valve maintenance	 Windlass Band Brake Inspection -remove and inspect brake bands. -inspection to include: brake lining, pins, band eyes, threaded actuation rod and nut. -Stbd brake lining worn according to United Engineering. One spare brake lining set onboard. Sample taken and will be delivered to NWE CC Feb 21, 2018 to ensure the spare lining is not asbestos containing. 	Windlass Inspection Perform Survey Work Remove and inspected bearings. We suspect the bearings to have excessive clearance, we need to check the housing for out of round and also check the shaft dimensions and the shaft for out of round.
Н-38 Н-38	H-44	E-45	E-46
Refit	Refit	Refit	Refit
In Pess	Planned	Planned	In Progress

See recent emails from Cody. See recent emails from Cody. The parts for the installation of fuel monitoring systems on CCG ships. See recent emails from Cody. The parts for the installation should be arriving soon.	ints	tion	king/Sealing trical Termination Maintenance e SCR drive door required sealing. ewage Media Tank. Transit injected rim measure – due to huge ACM ing fwd of Upper Deck Galley steps in way to clean the trunk due to huge ssing through transit – 75? This job in May-Jun Refit as a (High Risk?) Transit Testing as per Tech Bulletin 2017 Refit, but is far from complete. Results of this inspection indicate that original transits were installed badly. Engine Room & MCR bulkhead transits or Upper Deck had not yet been addressed.	nance Contract Inical bulletin 2014-06 Sit Packing/Sealing Sit Packing/Sealing Jan.2018: Contract Consulting Connections are checked Consulting Consulting Connections are checked Consulting Connections Connecti	Contract
Install Fuel Meters Refer to previous CCR Daily & weekly fuel consumptions are estimations and theoretical estimates are generally more accurate than soundings & trim tables, especially since drafts are rarely looked at or recorded.	Comments	Description	it Pacl	Electrical Termination Maintenance commenced as per CCG technical bulletin 2014-06 Refer also to E-20 Cable Transit Packing/Sealing Entire MCR Main Switchboard, front & back incl Easy-Gens & MCR MCS was cleaned & tightened June.2017 RM. The following work was done Jan.2018: -Emergency Switchboard -Bow Thruster Drive Cabinet -Derrick Cabs -Avtron Drives -Wheelhouse Consoles (x3) -MCR MCC s (Annual)	Transformer Service
E-51		Š	EL-01	EL-02	집 2
Refit			Reflit	Reflit	Refit

O:\Engineering\Refits\2018 May-June



Koho Marine Consulting – George Kohorst

Rewire or re-terminate?

Page 5 of 11

1. HEATING DISTRIBUTION: Marcus Transfor (3) 25KYA, Type 460V - 250V Spec 105-T 60 Hz, 1 Ph. C. 58T # 13976-12 /87 Cus Transfor 460V - 230V Transfor 50 Hz, 1 PH, 1 19H, 13978-112 Marcus Transfor 150KVA, Troe E 575V . 460Y 506: 2552 60 Hz, 3 Ph. Cl. Ser # 5210-158 Acme Division T 8KVA 480r = 208y/126 65 Hz, 3 Ph. Cl ser # 11263-5 ž K Please find a list of the following transcoor Seriests with the second of the second o Trems formars, coast Guard Vessela CHIEF ENGINEER, ACTINE 4. Hom-Ess Parker India: 3. More Pomer. 2

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O:\Engineering\Refits\2018 May-June

Page 6 of 11

	S	Repeat. See R-60			Arc flash shields ACM-free cert	
КОНО	Contract	Contractor / KOHO	SC/Contractor			
DC Distribution Ground Faults/PMC ts -ground fault detecting relay installed January 2018 -update drawings and distribution as requiredinvestigate the faults caused on the PMC system when running the E-gen. Fault was traced to the ground fault relay ground connection.	Bow Thruster Cabinet Replace bow thruster cabinet with size more suitable for new Siemens SCR drive. Cabinet was not replaced when electronics were replaced due to time & \$ constraints. Smaller cabinet would create more much needed room in the "gym" space.	Cable Transit Testing & Repair See correspondence. Note that prior Jan.2018 Refit, we had only completed the engineroom, AMS, and MCR bulkhead transits, leaving 25-66% of transit testing outstanding.	IGARD Ground Fault Detector Integration with PMC Alarm Panel -ground faults on heating and galley are presently only detect at the attention of the watch keepers viewing the ground fault display. -these panels should have a voltage free (dry) set of contacts we could use with PMC to given an alarm. -this would help when running the AC plant with the reheat system working. Ground faults would not go unknown and allow the engineers to act to rectify the faults. -see NWE Asbestos precautions as the wiring passes into the MCR console.	Unpacked Transit on top of Non-Essential Distribution Panel (MCR) -transit is not packed. Will require the non-essential panel to be isolated during repairs.	Arc Flash Relay Install on MCR Breakers	Convection Oven -insufficient ventilation from bottom panel the oven is mounted on. Add details
EL-05	EL-16	E-18	П 0	E-20	E-22	E-25
Refit	Reflit	Refit				

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needs replacing or repairing - est

\$30K

Estimating that 1/3 of ships

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Durometer 3/8" x 3/8" rubber by United, Jun 2017 Worse weld Repaired top & bottom ordered from NE Seal. RM. SEs Outboard Port Hole replaced, Jun 2017, 40 than anticipated. RM Comments All Porthole gaskets See D-02 and E-56 Resource Summer Refit As you noted, all porthole seals passed a chalk test last patrol and it is winter for this refit, perhaps repairs on porthole when they are not Identify & Specify what is required - ie chalk test all of them currently failing is not a priority. However, for reference in the future Attached is a copy of the Porthole Inspection completed last month. (*May/June Refit) the following is a list of the locations for the Extensive scale and Extensive scale and Scale and corrosion Scale and corrosion Scale and corrosion No Corrosion No Corrosion Comments corrosion corrosion U30 - Port side 2nd cabin fwd of WT door Description portholes that are in the worst condition: U31 - Stbd side aft of WT door Deck have United Eng repair them all. replace them all, (PRIORITIZED) U17 - Senior Engineer Head Port-Light Weld Repairs Options: 4 to 6 o'clock 4 to 6 o'clock position and Location of Corrosion 12 o'clock Laundry Room Fwd position Worst Laundry Room Aft U16 - Sick Bay U 17 Head Location 6/11/2017 U 15 U 16 U 23 U 26 J 4 U 22 N 00 Š Refit

U 29 U 30 U 31 U 32 U 32 U 32 U 35 U 35 Laundry Forward Porthole Porthole Dosition U 36 U 36 U 36 U 36 U 38 Ort-Light Maintenance and/or Repletions: Identify & Specify what is requirereplace some of them or all of the have United Eng repair them all ort-Light Maintenance ort light tubes sealing surface to be ew gaskets to be fitted to deadlightew gaskets to be fitted to deadlightew gaskets to be replaced 13" (einforced) ort-Light, SE's Cabin Head Repandithuned removal of asbestos panerance and a specific some of them or all of the have United Eng repair them all ort-Light glass to be replaced 13" (einforced) ort-Light, SE's Cabin Head Repandithuned removal of asbestos panerance and the specific some of the specific specific some of the specific some of the specific specific some of the specific s		Page 9 of 1		me	8 May-J	O:\Engineering\Refits\2018 May-June
U 29 Scale and corrosion U 30 position Extensive scale and U 30 position Corrosion U 31 A o'clock Extensive scale and U 32 Scale and corrosion U 33 Scale and corrosion U 35 Scale and corrosion U 36 Scale and corrosion U 37 Scale and corrosion U 37 Scale and corrosion U 38 Scale and corrosion U 36 Scale and corrosion U 37 Scale and corrosion U 36 Scale and corrosion U 37 Scale and corrosion U 37 Scale and corrosion U 38 Scale and corrosion U 30 Octor Malling and corrosion U 30 Octor Malling and corrosion U 30 Octor Malling and corrosion U 37			atement. noval of asbestos panelling from accommodations &	Asbestos Aba Continued ren	D-03	Refit
U.29 Scale and corrosion						
U29 Scale and corrosion		- 14 miles	E's Cabin Head Repair	Port-Light, SI	å8 6∆	Refi
U27 Scale and corrosion U29 10 o'clock Extensive scale and corrosion U30 10 o'clock Extensive scale and corrosion U31 4 o'clock Extensive scale and corrosion U32 Scale and corrosion U32 Scale and corrosion U33 Scale and corrosion U35 Scale and corrosion Laundry Forward 4 to 6 o'clock Extensive scale and corrosion D- Portholc position Scale and corrosion U36 Scale and corrosion D- Port-Light Maintenance and/or Replacement 02a Specify what is required – ie chalk test all of them 5. replace some of them or all of them. 6. have United Eng repair them all, (reasonable). D- Port-Light Maintenance -port light tubes sealing surface to be prepped and painted. -new gaskets to be fitted to deadlight and port-light -port hole tubes sealing surface to be prepped and painted.			ss to be replaced 13" OD 3/" thick wire mesh	-Port-light glas (reinforced)		
U 29 10 o'clock Extensive scale and corrosion U 30 10 o'clock Extensive scale and corrosion U 31 4 o'clock Extensive scale and corrosion U 32 U 33 Scale and corrosion U 35 Scale and corrosion Corrosion Laundry Aft 3 to 9 o'clock Extensive scale and corrosion Laundry Aft 3 to 9 o'clock Extensive scale and corrosion U 36 Scale and corrosion Corrosion Corrosion Laundry Aft 3 to 9 o'clock Extensive scale and corrosion U 36 Scale and corrosion Corrosion Corrosion Laundry Aft 3 to 9 o'clock Extensive scale and corrosion U 36 Scale and corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosion Corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosion Corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosion Corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosion Corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosion Corrosion Corrosion Corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosion Corrosion Corrosion Corrosion Corrosion U 36 Scale and corrosion Corrosi	Lead Paint		<pre>yen Door se sealing surface to be prepped and painted.</pre>	Port-light E-g	2° 6	Ę
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Page 9 of 11

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s.21(1)(b)

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:	CCGS-NGCC, Bartlett Chief Enginee

Sent: May 1, 2018 2:25 PM **To:** CCGS-NGCC, Bartlett Captain

CCGS-NGCC, Bartlett Senior Engineer, CCGS-NGCC, Bartlett Chief Officer

Subject: FW: Electronic Console CCR Drafts

Attachments: Electronic Console ACM Abatement & Rewiring.pdf; Bridge Fire Panel Isolation - Re

ACM Abatement.pdf

Importance: High

Capt,

Once you have signed CCRs (if your choose to), then I will complete them and forward them to Gabe so that he can start working on actioning them for refit (electrical & asbestos contracts at least).

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: April-27-18 6:42 PM **To:** CCGS-NGCC, Bartlett Captain

Cc: CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer

Subject: Electronic Console CCR Drafts

Importance: High

Capt,

I drafted the following CCRs: (in S-Drive "2. In Process ..." folder)

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

1. Identific		CUIIII	5uration Cr	ange Reques		7	
	ation						
	T	Originator	R.McKenzie	2	250.882	.1273	Date 2018-04-27
CCR Number		Contact		22			Region Western Region
ivuinuei		Contact		2			
CCR Title	Electronic Cons	sole ACM Abatemer	nt & Rewiring	AMS	W.O.#:		
Equipment	Integrated Con		-	A	BS #:	19D	
System	-	e Room Controls		Asse	et Title:	Bridge &	Eng Room Electronics Consoles
Drawings and/	or specification a					<u> </u>	
Type of w	ork H	ΛE	[Z E&I		MCI		☐ S/ER
2. Categor	V						
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High [,						ed within three months.
Urgent ✓	•	·····					
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3. Propose	d Configura	tion Change (A	dd attachment as re	equired to explain the	situation in	detail)	
				·····	***************	~~~~~	ents affected by change.
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Configuration Change Request (CCR)

4 C	CR	Impact Assessment Checklist								
Step	····	If impact applies, select (☑) for each item selected, attach file containing supporting details or AMS W.O. number related.								
Step		To close CCR, (See Section 10) Verify that the action required to address impact was completed and attach the file containing supporting details or AMS W.O. # related.								
#	1	Will Change have an impact on: (Give a brief description in an attached file.)								
1		Safety, health, habitability and human factors.								
2		Operational capacity, performance, and/or reliability.								
3	П	Compliance with laws/regulations and security requirements.								
		Ship Stability, changes requirements - weight added and removed (Refer to standard operating procedure).								
4	Ш									
5		Other similar systems or interfaces with other systems.								
6		Real property.								
7		Environment, Environment								
8	П	Other configuration changes that have been proposed or approved.								
		Electrical power requirement; Electromagnetic compatibility; Equipment removal routes; HVAC and cooling.								
9	Ш									
10		Existing inspections, tests and/or trials.								
		IT Security: Seek Regional or National IT Security Coordinator advice where change could potentially compromise IT security.								
11		Arrange for action required (e.g. Risk Assessment, supporting documentation, etc) to maintain IT system security.								
12		Operations and Maintenance costs.								
13		Software.								
14		Procurement: Procure as necessary: Modification kits; Spares, repair parts and consumables; Special tools; Test equipment; and Diagnostic software.								
		Friedrich and the standard Mr. H. C. and be such addition and the								
15		Existing inventory: Locate and modify all affected spares held in inventory.								
	Disposal: Locate and purge all equipment and parts that are no longer required.									
16		onsposar, Eucare and purge an equipment and parts that are no longer required.								
		Technical Data : Revise the affected drawing indices, drawings and parts lists. Affected Drawing(s) #:								
17										
	Amend the operating manuals and maintenance manuals affected by the modification.									
18	Ш									
19	H	Update the maintenance requirements to be consistent with the revised configuration.								
12	Ш									
20	П	Training: Update the training of personnel to reflect the modified equipment, including the revision of training								
71	-	Facilities: Modify / renovate facilities as necessary, including installation requirements such as space, power, air conditioning, lighting, etc.								
21	Ш									
		AMS: Update the asset structure in the Asset Management System, identifying new maintenance items.								
22										
		CM File: Place all documents pertaining to modification approval in the modification documentation file and retain for								
23		reference.								
24	m	선생님들은 아이들은 아이들은 아이들은 아이들은 아이들은 아이들은 아이들은 아이								

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"	Name	Signature	Title	Date
2A				
	Name	Signature	Title	Date
28				
	Name	Signature	Title	Date

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Configuration Change Request (CCR)

6. Re	gior	ial Evaluatio	n					
Yes	No			ttee members to evalua	ite documen	tation before Regional	approval.	
		Change is prope	rly docun	nented section 3, includin	g detailed de	scription, photos, sketch	es and/or dra	wings.
		Change is justifi	ed: given	operational role, age and	life expectan	cy of asset (justification i	s attached).	
		All items on imp	acts asses	sment are either not app	licable or hav	e been assessed as accep	otable or mod	ification plan is
f the file	e is inc	omplete, return to	originator a	ind comments:				
					3.2		ate	
Configi For a M form ar	uratio Najor C	Change Reques CR, the signature kage is to be for	t Coordin of the Op varded to	required in Part 6, a copy ator (NCCRC) for informat erational and Technical A the NCCRC for action at I	ion as soon a Authorities are	s it is approved by the re e required to confirm sup	gion. oport by the R	
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n				∏Reject				
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Yes	No	Operational Au		aluation				
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Configuration Change Request (CCR)

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•••		oard (CCB) Decision					
es No Responsibilit	y of Comm	ittee members to evaluate	documentation befo	re Regional approva	al.		
		umented section 3, includin					
L. L		n operational role, age and					
	mpacts as:	sessment are either not app	licable or have been	assessed as accepta	able or modification plan is		
└──	originator and	comments:					
				Date			
ototype" regarding the prop	osed solutio	n Control Board (CCB) is to provic in within the Configuration Chan of financial resources, which is th	ge Request (CCR).				
Preliminary Approv		Develop / Engineering Stud		Prototype			
nairperson:							
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	Confi	guration Ch	ange Reques	t (CCR)	Email DATA	Email PDF	Print
1. Identification								
	Originator	R.McKenzie	25	250.882	.1273	Date	2018-04-2	7
CCR Number	Contact		20			Region	Western R	egion
	Contact		28					
CCR Title Bridge Fire Pane	l Asbestos Abaten	nent	AMS	W.O.#:				
Equipment Safety and Secu	rity Equipment			3S #:	10E01J0	4		
System Fire Monitor Sys			Asse	t Title:	Notifier I	Monitor Unit	<u> </u>	
Drawings and/or specification aff		- I				I possess		
Type of work HM	E	Ø E&I		MCI		<u> </u> S	/ ER	
2. Category								
Priority			Description					
Normal	onfiguration chang	ge is justified, bu	ıt not urgent or hi	gh priorit	ty.			
High 🔲 A solution to an	operational or tec	hnical problem	must be determin	ed and ir	nplement	ed within th	ree month	S.
Urgent 🛛 Affects safety or	the ability to cond	duct operations	and must be imple	emented	immediat	ely.		
Scope:	Minor	Major	Major Nation	al	Descript	ion: Form, Fi	t Function	
2.0	· Cl							
3. Proposed Configurations: Item affected. Id								
Asbestos Containing Dust Levels								40.00 - (
exposed to similar airbourne dust console or from outside in. RECOMMENDED SOLUTION: Describe he opportunity. Rough sketches or diagrams A. Best Solution: Remove all asbe rewiring the entire console. B. Interim & temporary solution u. Remove door from Notifier par readout & display functions wit 2. Replace all cable glands with a 3. Seal all thru-deck transits to Vo. 4. Install Hepa filters on console vextent that electronic components in the console of the consol	ardware or software me may be attached to an estos from this con intil the asbestos c nel and install inser thout being expos- irtight glands to se old Space below. (I vent lovers, (but me ents do not get sul nent to console to lose like home cen	odification, and / or aplify this description isole, and seal tr an be fully remon at on top of Notified ed to asbestos con all Notifier pane Regulation - fire ust consult with fficient cooling), facilitate "negat tral vacuum fitti	recommended study to in. Enter rough cost est ansits from consoloved from the con- fier Fire Panel (see ontaining dust with I from console inte stop) Viking & VIEW to dive pressure" in co- ing).	o correct th imate for the e to Void sole; we Diag.1 a chin the cerior. ensure the	e problem one project. Space be could do to ttached) to console. at the filte menever accommon to the problem of the problem	r to capitalize o low Wheelho the following o allow work ers do not im cess is requi	ouse. This g: ker to exam npede air fl	will require nine display ow to the
Create a safe working atmosphere								
Reduce costs of future work in Ele Minimize vessel downtime by not inspection or repair of critical pro Improve likelihood that a contrac asbestos).	ectronic consoles. thaving to create I pulsion machinery	Medium - High F and/or electror	nic components.					
IMPACT ON MAINTENANCE BUDGET :	Yes	☑No □ IW	IPACT ON OPERATION	L BUDGET	:		Yes	[∕] No □
Impact of not implementing char desirability of each alternative wa	ige e.g. safety haza	ard, mission failu	ire, high maintena	nce cost:	s, schedul	e slippage. E	xplain rela	tive
Potentially creating a hazardous v Maximizing costs of future work in Maximizing vessel downtime by r opened for inspection or repair of Increased possibility that a contra	working atmosphe n Electronic conso not having to creat f critical machinery	re for ship's crev les. re Medium - Hig r and/or electroi	h Risk ACM work e nic components.					
	RELIMINARY Estima						Estimated	
FY:	FY	+1	F)	′+2		(attach	sheet with	details)
£5.000.00	1							
\$5,000.00							\$5,000.00	

Configuration Change Request (CCR)

Email DATA Email PDF Print

CU	Impact Assessment Checklist
1	If impact applies, select (回) for each item selected, attach file containing supporting details or AMS W.O. number related.
2	To close CCR, (See Section 10) Verify that the action required to address impact was completed and attach the file containing supporting details or AMS W.O. # related.
1	Will Change have an impact on: (Give a brief description in an attached file.)
\boxtimes	Safety, health, habitability and human factors. Currently Potential Risk of Airbourne Asbestos on Bridge
\boxtimes	Operational capacity, performance, and/or reliability. Currently reduced capacity & reliablity> unable to access consoles.
\boxtimes	Compliance with laws/regulations and security requirements. Extremely High Asbestos dust levels pose severe health risk.
	Ship Stability, changes requirements - weight added and removed (Refer to standard operating procedure).
\boxtimes	Other similar systems or interfaces with other systems. MCR (Motor Control Room) similarly affected.
	Real property.
	Environment.
h	Other configuration changes that have been proposed or approved.
	Electrical power requirement; Electromagnetic compatibility; Equipment removal routes; HVAC and cooling.
\bowtie	Cooling of electronics while simultaneously reducing air flow thru electronic consoles by sealing transits & fitting HEPA filters.
\boxtimes	Existing inspections, tests and/or trials. Additional ACM air sampling & dust swipes required.
	IT Security: Seek Regional or National IT Security Coordinator advice where change could potentially compromise IT security. Arrange for action required (e.g. Risk Assessment, supporting documentation, etc) to maintain IT system security.
\boxtimes	Operations and Maintenance costs. Full asbestos abatement will minimize future resources costs, (dollars, time, labour).
	Software.
N/	Procurement: Procure as necessary: Modification kits; Spares, repair parts and consumables; Special tools; Test equipment; and Diagnostic software.
E3	Recommend regular air sampling & testing as proof that reasonable abatement procedures are effective.
	Existing inventory: Locate and modify all affected spares held in inventory.
	Disposal : Locate and purge all equipment and parts that are no longer required.
	Technical Data : Revise the affected drawing indices, drawings and parts lists. Affected Drawing(s) #:
	Amend the operating manuals and maintenance manuals affected by the modification.
-	Update the maintenance requirements to be consistent with the revised configuration.
Ø	Known ACM hazards must be documented, and precise procedures for opening or working in electronic consoles documented.
	Training : Update the training of personnel to reflect the modified equipment, including the revision of training
X	All personnel opening or working in electronic consoles with ACM warning, MUST have Asbestos Abatement training (Awarenes
	Facilities: Modify / renovate facilities as necessary, including installation requirements such as space, power, air conditioning, lighting, etc.
[Electronic Cabinets with documented hazardous asbestos dust must be abated and/or modified to render occupied areas safe
	AMS: Update the asset structure in the Asset Management System, identifying new maintenance items.
	Existing Annual Asbestos Survey will require updating to reflect new findings & new warnings and highlighted asbestos concern
	CM File: Place all documents pertaining to modification approval in the modification documentation file and retain for reference.

CCR Version: 2014

Configuration Change Request (CCR)

Email DATA Email PDF Print

Name Signature Title Date Name Signature Title Date Name Signature Title Date Name Signature Title Date	Ross McKenzie	Ross McKenzie	Chief Engineer	2018-04-27
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Name Signature Title Date				
		Signature	Title	Date
	A			
		Signature	Title	Date
28	2			
Name Signature Title Date		Signature	- Title	Date

CCR Version: 2014

Print

Email DATA Email PDF

Configuration Change Request (CCR)

6. Re	gior	nal Evaluation							
Yes	No					tation before Regional a _l			
		Change is properly o	locumented s	section 3, including de	etailed de	scription, photos, <mark>sketch</mark> es	and/or drawir	ngs.	
		Change is justified: o	iven operatio	onal role, age and life	expectano	cy of asset (justification is a	ttached).		
		All items on impacts attached.	assessment a	are either not applicat	ole or have	e been assessed as accepta	ble or modific	ation plan is	
f the file	e is inc	omplete, return to origii	nator and comi	ments:					
C ~~ ~ N	Ninne C	CO all three cianatur		d in Boot 6 o convent	ha farm	Dat and package is to be forwa		tional	
Config For a N	uratio 1ajor C	n Change Request Co CCR, the signature of t	ordinator (NC he Operation	CRC) for information al and Technical Auth	as soon a: orities are	ind package is to be follow s it is approved by the regi required to confirm supp CRCoordinator@DFO-MPC	on. ort by the Reg		
Yes	No	Operational Autho							
	_								
Ш	L	Name		Signatu	Signature			Date	
		Technical Authority							
т									
Ш	ш	Name		Signatu	re	Title		Date	
		Financial Authority (For Minor CCR or	ly)					
П	П								
· · · · · ·		Name		Signature		Title		Date	
R	egion	al		Reject		☐ Defe	·r		
	mmit	Second .	R: Approval			Develop / Engineerin	9		
L	ecisio	Major CCI	R: Recommen	d		Implementation			
<u> </u>	Ainor f	funding Source		Project#	A	.MS Work Order #		VBS#	
			-		L				
,		al Headquarter		on					
Yes	No	Operational Autho	rity						
					Signature		Title		
		Name Technical Authority	Name						
		recimical Authority							
		Name	·····	Signatu	· · · · · · · · · · · · · · · · · · ·	Title		Date	
		Asset Class Manager		Jignatu	C	1000		Date	
		Name		Signatu	re	Title		Date	
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	lation mmit		R: Approval			Develop / Engineerin			
	ecisio		R: Recommen	d		☐ Implementation			
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ent CCR Version: 2014

		Configuration	Change R	Request	(CCR)	Email DATA	Email PDF Print
8. Assigned Respon	sibility and	Updated Estim	nate				
Engineering OPI:							
nstallation OPI:		Nä	ime			Title	
		Na	ime			Title	***************************************
Preliminary Engineering Sequired, cost and source):	tudy (if					•••••	
Recommended Timing (Sta	art date;				······································		
duration): Recommended Source (Sei	rvice Delivery)						
FY:	Estima	FY + 1	ar	FY -	+ 2		Estimated Cost sheet with details)
			i a			\$0.00	
9. Configuration Co	ntrol Board	(CCB) Decision	ns.				
***************************************		nembers to evaluate		tion before	Regional appro	val.	
		ted section 3, includir					
☐ ☐ Change is just	ified: given ope	rational role, age and	l life expecta	ncy of asse	et (justification is	attached).	
		ent are either not app					lification plan is
니 니 attached.		·····					•
the file is incomplete, return to or	iginator and comm	ents:			-		
					Date		
Note: The mandate of the HQ Co					", approval for "De	velopment / E	ngineering or
Prototype" regarding the propo							a anses
he CCB does not approve the as				the respecti	ve National Manag 	gement Commi	ttee (NMC).
Preliminary Approva	I Devel	op / Engineering Stud	ly		Prototype		
Chairperson:							
		Name		S	ignature		Date
CCB Approval	□ Appro	ove In Principle	ПReje	ct		□Defer	
Chairperson:	land ''	· · · · · · · · · · · · · · · · · · ·				11	
	Name Name			Signature			Date
CB Instructions:							
Asset Class Manager	Α	MS Work Order#		Proje	ct #:		WBS#
	Exper	nditures by Fiscal Yea	ır			Total	Estimated Cost
FY:		FY + 1		FY -	+ 2		sheet with details)
							\$0.00
						<u> </u>	
10. Final Approval f	or Close ou	t (Same persons or r	eplacement	who siane	d at section 5.0)		
- Unit / Originator - Confi							
	ınature	Date	3	T	Signatur	e	Date
rint Name/Title :		*		ame/Title :			
			4				
rint Name/Title :			Print Na	ame/Title :			
3- Engineering OPI Signati	ure (Engineering	OPI who closes the CC	R must ensure	that work i	dentified in sectio	ns 4 Step 2, an	e implemented.)
mplementation, inspection, te	st and/or trial resu	ults:			1. 1. 20 1. 1.		
N. C. COLA			3.34. 0 50000	V 6	261		
Note to OPI: A copy of the comple	ted form and suppo	orting details to be forward	aed to the NCCI	sc. See SOP P	ara 5.6.1	,	
Fotal Cost at Completion:		Date:			Signature OPI.		

Document divulgué en vertu de la Loi sur l'accès à l'information.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

May 4, 2018 8:39 AM

To:

CCGS-NGCC, Bartlett Engine Room

Subject:

FW: Bartlett Bridge Consoles

Attachments:

Bartlett Telecon Summary and Notes - March 28

Importance:

High

FYI

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: March-28-18 4:06 PM

To: Readman Tristan

Cc: Granger Louise Anne; CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain

Subject: Bartlett Bridge Consoles

Tristan,

This afternoon the Bartlett Chief, Captain and myself had a conference call with North West Environmental. The purpose of the discussion was the way forward for the Bartlett bridge consoles and specifically how can we get technicians into these spaces without endangering themselves or contaminating the bridge. I've included the notes from that talk as an attachment.

It is unlikely that we are going to get to an asbestos-free condition within the consoles and they are open to the crawl space so the entire area must be considered as contaminated. The spaces have been professionally cleaned but more dust is guaranteed to accumulate. The good news here is that with the use of the ship's certified HEPA vacuum before and after working in the consoles, contamination of the bridge is a non-issue according to NWE.

In order to access these areas all technicians will require some level of asbestos training. This could be the 4 hour Basic Awareness course or the 2 day Abatement Level II. _____rom NWE is going to get back to me with more details on this question. The abatement course is meant for people who will be repairing or encapsulating containing material, but extra training may be better. Separate from this training the technician will require a half mask so fit testing either with or NWE is necessary.

A potential work around in the mean-time would be to utilize trained ship's engineers to complete work inside the consoles. I know this is less than ideal all around but the Chief offered this option so I had to mention it.

The Chief is also currently developing a plan to place the consoles and the crawl space under negative pressure and HEPA filtering the air both as it enters the crawlspace from the consoles and as it is exhausted overboard.

The Bartlett is expected alongside at IOS on April 9th. I will be onboard that day and will be available if you would like to come out or send someone out to discuss further.

Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Regards,

Gabriel Chaikin

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering Fisheries and Oceans Canada / Government of Canada gabriel.chaikin@dfo-mpo.gc.ca / Tel: 250-363-0228

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale Pêches et Océans Canada / Gouvernement du Canada gabriel.chaikin@dfo-mpo.gc.ca / Tél.: 250-363-0228

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: Chaikin, Gabriel < Gabriel. Chaikin@dfo-mpo.gc.ca> Sent: May-04-18 8:44 AM

To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain

Cc: CCGS-NGCC, Bartlett Wheelhouse; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC,

Bartlett Senior Engineer

Subject: **RE: Bartlett Bridge Consoles**

For this teleconference it was

Captain Mike McCullagha, and myself.

Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccqs-nqcc.qc.ca]

Sent: 2018-May-04 8:37 AM To: CCGS-NGCC, Bartlett Captain

Cc: CCGS-NGCC, Bartlett Wheelhouse; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin,

Gabriel; CCGS-NGCC, Bartlett Chief Engineer Subject: FW: Bartlett Bridge Consoles

Importance: High

Captain,

The attached email & attachment summarizes some decisions & opinions.

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.qc.ca]

Sent: March-28-18 4:06 PM

To: Readman Tristan

Cc: Granger Louise Anne; CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain

Subject: Bartlett Bridge Consoles

Tristan,

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The Bartlett is expected alongside at IOS on April 9th. I will be onboard that day and will be available if you would like to come out or send someone out to discuss further.

Regards,

Gabriel Chaikin

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering Fisheries and Oceans Canada / Government of Canada gabriel.chaikin@dfo-mpo.gc.ca / Tel: 250-363-0228

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale Pêches et Océans Canada / Gouvernement du Canada gabriel.chaikin@dfo-mpo.gc.ca / Tél. : 250-363-0228

CCGS-NGCC, Bartlett Chief Officer

C 4	Chaikin, Gabriel < Gabriel. Chaikin@dfo-mpo.gc.ca>	
Sent:	June-30-18 5:19 PM	
То: Сс:	CCGS-NGCC, Bartlett Chief Engineer	fficam CCCC NCCC Dambles
CC.	CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Of Senior Engineer	incer, ccgs-NGCC, Bartier
Subject:	Re: ACM on ship as per Environmental Assessment	s.16(2)
,	No. 7 G. 11	s.19(1)
		`,
		s.21(1)(b)
Sent from my Blac	kBerry 10 smartphone on the Bell network.	
From: CCGS-NGCC,	Bartlett Chief Engineer	
Sent: Saturday, Jun	e 30, 2018 16:31	
To: Chaikin, Gabriel	tlatt Captain, CCCC NCCC Partlett Chief Officer, CCCC NCCC Partlett Co	niau Fasinaau
	rtlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Se In ship as per Environmental Assessment	enior Engineer
•		
Gabe,		
	ulted with the Captain and Marine Superintendent on this issue (Capt M.	Shuckburg), and we are
proceeding	n a responsible manner.	
2.		
2.		
3.		
3.		
3. 4.		
4.		
4. Regards,		
4. Regards, Ross McKenzie		
4. Regards, Ross McKenzie Chief Engineer, CCG	5 Bartlett	
4. Regards, Ross McKenzie Chief Engineer, CCG		
4. Regards, Ross McKenzie Chief Engineer, CCG: Cell: BartlettCE@bar.ccgs	s-ngcc.gc.ca	
4. Regards, Ross McKenzie Chief Engineer, CCG: Cell: BartlettCE@bar.ccgs		

Ross,

Sent: June-30-18 2:17 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: Re: ACM on ship as per Environmental Assessment

s.16(2) nformation Act / Document divulgué en vertu s.19(1) le la Loi sur l'accès à l'information.

On Friday morning at our WER meeting and I talked this out. came in also and I had him relay the event. From all of our perspective there is low possibility of exposure. That doesn't mean there isn't a chance.
Regards,
Gabe
Sent from my BlackBerry 10 smartphone on the Bell network.
From: CCGS-NGCC, Bartlett Chief Engineer Sent: Saturday, June 30, 2018 09:47 To:
Cc: Chaikin, Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer Subject: RE: ACM on ship as per Environmental Assessment
Good Day
It is regrettable that this incident transpired. We are conducting our own Incident Investigation regarding this matter, and shall likely be consulting with you & your staff in the process of completing our investigation, after which we will be in a better position to directly reply to your questions to your full satisfaction.
Respectfully,
Ross McKenzie Chief Engineer, CCGS Bartlett Cell:
BartlettCE@bar.ccgs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB
From: Sent: June-29-18 10:52 AM To: CCGS-NGCC, Bartlett Chief Engineer
Subject: ACM on ship as per Environmental Assessment

Ross,

It has come to my attention that a material containing ACM was disturbed while servicing on the water tight doors. I realize the environmental assessment has been forwarded to me and I have made a copy available to my crew. As I have

to do a safety investigation about this incident the one glaring thing that has come to my attention is that in contravention with WorksafeBC regulations as follows;

6.13 Designated area

- (1) Before starting work with asbestos-containing material, the employer must, with due regard for the level of risk,
- (a) identify and mark the boundary of the designated work area by barricades, fences, or similar means,
- (b) ensure that the immediate work area is cleared of objects, materials and equipment other than that required to do the work, and
- (c) ensure that windows, doorways and all other openings are adequately secured to prevent the release of asbestos fibre into other work areas.
- (2) The employer must post signs at the boundaries of the designated work area indicating asbestos work is in progress, the hazards, and the precautions required for entering the work area.
- (3) The employer must restrict entry into the designated work area to authorized persons who are adequately protected against the level of risk within the designated work area.

In light of that, my question to you is, who is ultimately responsible during the refit period or otherwise to ensure the safety of the crew and subcontractors by providing the necessary engineering controls, (IE – signage, PPE, training etc), for the ship?

Regards,

Project Manager,

Quality Control, Occupational Health and Safety Ultrasonic Testing Representative



Canadian Maritime Engineering Ltd. West Coast Division

854 Devonshire Rd. Victoria, BC, V9A 4T4

Cell:

Phone: (250) 475-3553 Fax: (250) 590-0972

Email: jim.drummond@cmelimited.com

Website: www.cmelimited.com

CME is a division of the Russell Group of Companies www.russellindustries.com

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

May-05-18 2:21 PM

To:

CCGS-NGCC, Bartlett Captain

Subject:

Re: ACM Console Work

Attachments:

CCGS Bartlett - ACM Testing Follow-up

Follow Up Flag: Flag Status:

Follow up Flagged

Captain,

Explicit direction from Asbestos Consultants & direction has been as follows:

A). Re: Attached March 28, 2018 NWest Enviro Jen Taptuna "Telecon Summary & Notes" ACM Testing Folow-Up

2. Consoles:

- a. If cables are coated with an elastomeric coating, there will still be asbestos fibres in latent dust on inaccessible surfaces within the consoles, however, coating should help to reduce the amount of new fibres being released due to handling.
- b. If a spray encapsulant is used, the space should be placed under negative pressure as it may cause a release of fibres. Spray must not be pointed at dusty surfaces and cables should be vacuumed first to remove loose material.
- c. Cables are old there may be issues with excessive handling/encapsulation.
- d. Any console work will be moderate risk. Depending on the work activities, additional controls may be required (e.g. mini enclosure under negative pressure).
- → Implying WorkSafe BC Notice of Project required to be filed, and (preferably) the procedure performed correctly under guidance of Asbestos Project supervisor, including asbestos air sampling during the project and Bridge Clearance Document (which includes receiving satisfactory end of project air monitoring results returned from lab before bridge can be repopulated with unprotected workers).

B). Refer to points 1 & 2 below:

From:

Sent: January-31-18 3:35 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: Joel Shandro; Grant Rogers

Subject: Bartlett Wheelhouse Consoles Results

Hi Matt, please find attached the results for the dust samples collected in the Wheelhouse consoles. The concentration of the asbestos structures is high and the asbestos type is mixed (we usually don't see anthophyllite). It's not clear at this time what the source of the contamination is – I didn't see anything obvious during the testing. We suspect it's a result of pulling old cables throughout the years, however, they should be inspected more closely for other potential sources.

Recommendations:

- s.16(2) Document Released Under the Access to s.19(1) Information Act / Document divulgué en vertu
- de la Loi sur l'accès à l'information.
- 1. Keep consoles closed and off limits. Should access be required, workers must wear, at minimum, a half-face respirator (and be clean shaven), disposable clothing, and gloves and HEPA vacuum the area around the work location (vacuum must be certified within the last year).
- 2. Have a qualified and trained asbestos abatement contractor clean the consoles (all of them) following moderate risk procedures (HEPA vacuum and wiping non-porous surfaces, wiping the cables should not be permitted). Carpets and other surfaces near console openings should likewise be cleaned.
- 3. Conduct air tests in the Wheelhouse to determine whether fibres have become airborne.
- 4. Inspect for other potential sources of contamination.

Please let me know if you have any questions. Best,



North West Environmental Group Ltd.

(Primary)

P. 250-384-9695 ext. | F. 250-384-9865

201 - 415 Gorge Road East, Victoria BC, V8T 2W1

Respectfully,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell: 1

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

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201 – 415 Gorge Road East Victoria BC V8T 2W1

> Tel: 250-384-9695 Fax: 250-384-9865

e-mail:

File No. 34741 P1 V1.0

Via Email

16 February 2018

Matt Jackson Canadian Coast Guard 25 Huron Street Victoria, BC, V8V 4V9

Attention: Matt Jackson, Chief Engineer

Re: Proposal for Background Asbestos Testing on the CCGS BARTLETT While at Sea

North West Environmental Group Ltd. (NWest) is pleased to present a proposal for background air testing throughout the Canadian Coast Guard (CCG) vessel Bartlett while it is at sea to identify evidence of the potential spread of asbestos fibres during normal operational activities. The Bartlett is currently alongside at 25 Huron Street in Victoria, BC and will undertake one day at sea to accommodate this testing.

Asbestos containing dust was found in the consoles of the Wheelhouse and behind the washing machines and dryers in the Laundry Room, and asbestos-containing products were found unprotected in the Machinery Control Room (MCR) Stores (rope gaskets) and in the console in the MCR (wiring). In addition, historic data shows that asbestos is present in Marinite panels, floor tiles, and other materials. The above identified areas were cleaned of dust and, where practicable, the bulk ACMs removed. As a result of these findings, NWest undertook vessel-wide air sampling to try to determine whether migration of asbestos fibres had occurred and to determine the airborne fibre concentrations. Sample results did not indicate an air quality issue at the time of sampling.

Vessel vibration and movement may cause increased fibre concentrations in air. Normal operations cannot be recreated while alongside, therefore, at sea testing is required to obtain a clearer understanding of air quality related to asbestos.

To reduce confounding factors, at sea sampling should occur in the same locations as sampling undertaken while alongside (see sampling plan below). At sea testing will determine the presence of fibers in air during normal operation. Samples will be initially analysed by NWest using phase contract microscopy (PCM) analysis. If any samples exceed threshold levels, they will be further analyzed by transmission electron microscopy (TEM) to characterize the fibres. If TEM is required, the earliest we could receive results will be Tuesday February 13, 2018.

Scope of Work

NWest will collect air samples on the vessel for one day while it undertakes maneuvers in the Victoria area similar to those it would take during normal operations. The ambient air sampling plan is summarized in the following table.



Background Asbestos Testing At Sea CCGS BARTLETT

NWest Project No. 34741 February 8, 2018

DECK	LOCATION	AMBIENT AIR SAMPLING
Above Tank Top	Control Room	1
Upper Deck	Alleyway (aft and fwd)	2 (1 each)
	Winchman's Cabin	1
	Alleyway Outside of Aft Oiler's Cabin	1
Poop Deck	Alleyway	1
	Logistic Officer's Cabin	1
	Lounge	1
Boat Deck	Alleyway	1
	Chief Officer's Cabin	1
	Estimated totals	10 + 2 field blanks

Estimate

NWest will complete the above noted scope of work on a Time and Materials basis, estimated to be **\$4130** taxes not included. Estimated overtime required to meet the project schedule is included as straight time. A breakdown of budget estimate is as follows.

ITEM	TASK	UNITS (ESTIMATE)	RATE	EXTENTION
1	Technologist: attend vessel, site work, sample prep, reporting. Includes estimated overtime as straight time.	13 hours		
2	Lab Technician: Overtime to analyze rush samples Friday night or Saturday. Overtime shown as straight time.	4 hours		
3	Project Manager: project design, coordination	2 hours	.	
4	Senior Project Manager: review, consultation	1 hour		
5	Principal in Charge or Certified Industrial Hygienist: review, consultation	2 hours		
6	Sample Analysis: Ambient Air at PCM level (all samples first analysed at PCM). Engine Room sample added partway through sampling period. Should site conditions warrant additional samples to prevent overloading, they will be charged at a reduced rate	13 samples		
7	Disbursements (shipping and handling)	1		
	ESTIMATED TOTAL, taxes extra			\$2455

Limitations

The following limitations apply:



Background Asbestos Testing At Sea CCGS BARTLETT

NWest Project No. 34741 February 8, 2018

- 1. NWest requires safe access to compartments.
- 2. NWest requires access to electrical outlets to run air monitoring pumps.
- 3. NWest is not responsible for costs incurred due to delays in shipping, travel, or delivery of analytical results from laboratories. Additional costs are the responsibility of the client.
- 4. Mileage fees are waived.
- 5. PCM testing may not be able to determine the source of asbestos contamination, but rather, will be able to determine whether contamination exists.

NOTE 1: CCG should attempt to sample during worst case scenarios as these conditions usually result in greater levels of vessel vibration.

Insurance

NWest carries \$5 million Liability, \$5 million Pollution Liability and \$5 million Errors and Omissions Insurance.

Our WorkSafeBC number is 436736.

Closure

Yours truly,

We hope this information is helpful to you and we look forward to working with you.

Project Manager



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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

May 5, 2018 9:56 AM

To:

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC,

Bartlett Chief Officer

Subject:

Partial Record of Bartett Asbestos Testing

Attachments:

Partial Record of Bartett Asbestos Testing.docx

FYI. A brief summary of ACM (and hazmat) issues from alternate perspective.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

Summary of most significant Bartett Asbestos Testing

& Inconsistent Application of Remedial Action 5.05.2018

- → Making it appear that we are following reasonable & responsible practices
- Reference for TEM Dust Swipes: 10,000 100,000 structures/cm2 = "Medium Range"
- Laundry Room TEM Behind Washer: 14,800 s/cm2 Laundry Rm cordoned off with Caution Barrier Tape & Professionals contracted to remediate.
- 2. Engine Room TEM Behind Wellxtrol Tk: 55,500 s/cm2 Nothing done to remediate
- 3. Engine Room TEM Top of MCR Console: 28,000 s/cm2 Dust wipe cleaned up without fanfare
- 4. Wheelhouse Fire Panel Console Aft TEM: 9,990,000 s/cm2 Professionally Remediated immediately, but no retesting, (therefore we must only presume that asbestos dust level is probably lower than 9,990,000 s/cm2). Retesting results will no doubt vary, depending on whether we sample from a dusty area or a relatively clean area.
- W/H Stb'd Wing Console TEM: 370,000 s/cm2 Professionally Remediated immediately, and no re-testing.
- 6. ACM Wiring discovered:
 - a) W/H Fire Detection Panel: But ACM (Asbestos Containing Material) is not the outer insulation jacket, but rather the thin insulating strands twisted in-between the individual rubber-insulated conductors → (non-friable and negligible risk – in my opinion). It is incorrectly assumed, (in my opinion), that this is the cause of the cause / source of ACM dust in console).
 - b) MCR Console: Redundant Pyrometer Wiring → removed, then console professionally cleaned.
- 7. Other recent asbestos detected:
 - a) MCR Stores "Rope Gasket" / Pump Gland Packing → Discarded as ACM Waste
 - b) Engine Room Wiring, Black
 - c) WH Fire Detection Console Panel Wiring, Black
- 8. Previous significant asbestos & hazardous materials findings:
 - a) ACM Gasket 70% ACM
 - b) Lead Paint: Winch compartment Bulkhead & Piping. White Paint on save-all below Waste Oil Tank.
 - c) AMS: Steam Pipe Insulation: 10% ACM.
 - d) Upper Deck Stb'd: Floor Tile: 3% ACM
 - e) Upper Deck Stb'd: Deck Screed 0.5% ACM

Ross McKenzie Bartlett Chief

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

Chaikin, Gabriel < Gabriel. Chaikin@dfo-mpo.gc.ca>

Sent:

May-08-18 3:20 PM

To:

McMillan Cody; CCGS-NGCC, Bartlett Chief Engineer

Cc:

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC,

Bartlett Logistics Officer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief

Officer

Subject:

RE: 6 Areas or 6 Levels of ACM Testing Required

Team,

I have discussed this impasse with George Koherst, who initially identified some of the containing wires and has significant electrical experience onboard the Bartlett.

He would be willing and able to identify (with the help of NWE) and tag the suspect materials within the consoles this refit period allowing us to specify for contract in December. The work has to be biddable and this is the only way I believe we can get it into that form. Koherst did mention a new form of encapsulation that I had not considered before which is re-sheathing the old wires with heat-shrink rather than spraying a polymer into the consoles. I would rather proceed to remediation than to encapsulation if possible.

In order for him to be able to take on that job he must first have the asbestos training. It has requested (by you) for the training unit to save seats for our necessary contractors but no one has sanctioned this as yet. I have spoken with the Patricia from the training unit and am expecting a response soon from Rita as to whether we can invite contractors to our training or not. If we do get agreement then it may be wise to displace someone from the scheduled course on the 17th and 18th of this month. Apparently the course is at capacity and consists of 8 Bartlett crew and two others.

Cody and I are meeting with LouiseAnne in the morning regarding the asbestos remediation, testing, concerns, the CCR and 'Scott's' plan. Though the refit budget this year is higher than it has ever been, there remain significant budget restrictions due to... the Laurier of course.

I will provide a summary following the discussion tomorrow.

I have no intention of limiting testing or cleaning as required. Potentially encapsulation can be an effective way of kicking the can down the road. It is the remediation that is the concern and cannot be attempted outside of contract; the high end can of worms, so to speak.

Regards,

Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

From: McMillan, Cody

Sent: 2018-May-08 2:31 PM

To: CCGS-NGCC, Bartlett Chief Engineer; Chaikin, Gabriel

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Officer; CCGS-

NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer **Subject:** RE: 6 Areas or 6 Levels of ACM Testing Required

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My \$0.02 on the whole asbestos issue here. The cost to remediate the bridge panels will likely be in the neighborhood of \$100k as Ross has already pointed out at approx.. \$50k per console, assuming there are no work arising that increase this. it cost us close to \$10k just to wipe them "clean" and we still haven't identified the exact source of it in the consoles. Asbestos remediation is very difficult to write a proper statement of work for contracting, almost impossible to have it tangible and biddable without a massive pre work assessment, it's not good enough to just write in to re wire the console, there needs to be start and stop points, wire identification, system identification, test procedures for all affected equipment after the re wiring ect. Likely a complete engineering package in itself. If re wiring is required we will have to put a tender to have someone engineer and spec it, and then another tender to actually do the work.

I would suggest that this refit period efforts be spent on identifying the exact source of the asbestos in the console, and the other places that Ross has mentioned within the ship, and where we can encapsulate and clearly mark the affected wires and equipment for proper remediation in the future. If it is some wire that is causing the issue in the consoles and we can encapsulate it we could likely make the consoles safe for entry again without special requirements, if it is from past panels as suggested we can hopefully clear the consoles without having to rewire completely.

s.16(2)

Cody McMillan Marine Engineering | Ingénierie navale (250) 363-8533

s.21(1)(b)

From: CCGS-NGCC, Bartlett Chief Engineer < BartlettCE@ccgs-ngcc.gc.ca>

Sent: May-08-18 1:25 PM

To: Chaikin, Gabriel < Gabriel. Chaikin@dfo-mpo.gc.ca>

Cc: McMillan, Cody <cody.mcmillan@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain <BartlettCO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Senior Engineer <BartlettSE@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Logistics Officer

<BartlettLO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Engine Room <BartlettER@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett

Chief Officer <BartlettCHO@ccgs-ngcc.gc.ca>

Subject: FW: 6 Areas or 6 Levels of ACM Testing Required

Gabe,

We should probably have an asbestos meeting or conference call prior to Pre-Refit Asbestos and Hazardous Materials Assessments. You may want to include Red Crew Captain and (2) Red Crew Chiefs.

Because we are on program and busy, I do not see a conference call working. As much as I am adverse to spending 4-8 hrs discussing these issues on the day before Crew Change, (may 15th AM), there may not be another viable alternative.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

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From: CCGS-NGCC, Bartlett Chief Engineer

Sent: May-05-18 6:49 PM

To: CCGS-NGCC, Bartlett Captain **Cc:** CCGS-NGCC, Bartlett Chief Officer

Subject: 6 Areas or 6 Levels of ACM Testing Required

Capt,

Draft of Extensive ACM Testing required - attached,

In addition to previous document \rightarrow all fodder for a very very long discussion, (maybe a 2 day "Summit" would be more appropriate), unless perhaps I send a meeting "Agenda" ahead of time, and have all interested parties submit their own responses, or at least have their responses prepared.

Respectfully,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: May-09-18 1:26 PM
To: Chaikin Gabriel

CCS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC,

Bartlett Logistics Officer

Subject: RE: Refit Contracts - Contractors - Re: HVAC & Galley Range Ventilation Duct Cleaning

+ Range Hood Controller upgrade

Importance: High

That's great Gabe,

Please let me know when we've arranged tentative dates.

What do you think about Thu-Fri. May 24th & 25th for Galley Range Hood Controller upgrade, (Emery − Ly) and Mon-Tues May 28th-29th -30th for Galley & HVAC Trunking Cleaning (Superior) → providing that gives us some time to receive TEM Dust Swipe ACM test results, (I'll confirm lead time with NWest).

Note that in both of those Galley jobs, we should be able to perform the required work without shutting down galley for more than 2 days.

Interesting about CME and LDV watchdog, esp considering that we gave them 3 "consecutive" \$9.5 K orders for Cu-Ni Piping. And I agree that in keeping with the spirit-intent of the LDV ruling, we should try to spread the work around, especially locally, (at least to the guys that deserve the work), and so far, we really like CMEs quality of work.

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: May-09-18 12:56 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Senior Engineer; CCGS-

NGCC, Bartlett Chief Officer

Subject: RE: Refit Contracts - Contractors - Re: HVAC & Galley Range Ventilation Duct Cleaning + Range Hood

Controller upgrade

Ross,

I'll contact Superior and see if I can book them for both duct cleaning jobs. I'll see if they can come in early in the refit for the galley and later for the ducting once we have the sample data.

For the range hood I think we should ask to do the install because he does great work and is nice to have around. Plus Koho will have other work onboard. CME has previously 'threatened' that we don't share our 10k LDV contacts around as freely as they believe we should. Meaning of course that they want more of them. I think it would be best to show

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that we do in fact hire many different companies as we require. For this reason especially I am glad that Koho is a regular on the Bartlett. Generally I hire Emery for all electrical work. That's for good reason though.

Regards,

Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.qc.ca]

Sent: 2018-May-09 10:16 AM

To: Chaikin, Gabriel

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Senior Engineer; CCGS-

NGCC, Bartlett Chief Officer

Subject: FW: Refit Contracts - Contractors - Re: HVAC & Galley Range Ventilation Duct Cleaning + Range Hood

Controller upgrade Importance: High

Gabe,

Re: Scheduling of:

1. Galley Exhaust Fan Ducting Cleaning, and

2. Gaylord Galley Range Hood Washdown System Controller Upgrade

Health Canada is already booked for June 11 & 12, so duct cleaning will need to be done before then.

- 1. E-49 Galley Exhaust Fan Ducting Cleaning. I can book Superior for this if you wish. I cold book them for HVAC cleaning too, (although we've not previously used them), although as previously stated, the job would be complicated hugely if airbourne asbestos or ACM TEM Swipe was found positive above deckhead panel.
- 2. EL-27 Gaylord Galled Range Hood Washdown System Controller Upgrade. As previously discussed, I cold ask if he wanted this job or whether he'd want to give it to George.

Regards.

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: May-08-18 12:58 PM

To: Chaikin Gabriel

Cc: CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer

Subject: FW: Refit Contracts - Contractors - Re: HVAC & Galley Range Ventilation Duct Cleaning

Importance: High

Gabe.

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Following up on previous email, (preferring to only address one main issue per email), of wanting to schedule duct cleaning for Refit period rather than Self Maintenance period, are you OK with me scheduling Galley Exhaust Fan Ducting cleaning with Superior, (will entail shutting down Galley for full day).

...... as well as HVAC cleaning. Note Re: HVAC, we may run into a problem with not being able to remove deckhead panels without running into asbestos, (but we have no evidence that that will be case), and that would be a huge problem, as cleaning ducting without removing end of line unit electric heaters cold be difficult, yet to not clean the ducting at all would be an OHS concern.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: April-23-18 1:33 PM **To:** Chaikin Gabriel

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Officer

Subject: RE: Refit Contracts - Contractors - incl HVAC

Gabe. We're on the same page. Superior steam/chem cleaned Galley ducting last year, so they already know what they're up against. They sent a full team for it, and it took them 12 hours, and ship's crew took care of having the fan motor removed & reinstalled before &after their cleaning.

I'm not sure who we normally use for duct cleaning, (we don't have a JetVac card, nor anyone else's that I can find), although superior can do that job too. I was hoping that contractor could do a before & after video or pictures of ducting. Although I would like NWest to check for mold before cleaning, and they should dust swipe recirc intake for asbestos before blowing that back into ship.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: April-23-18 11:04 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer

Subject: RE: Refit Contracts - Contractors - incl HVAC

Ross,

This last year \ We decided to call in Superior as they were the local company that does galley steam cleaning. They are an expensive company but

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thorough. The way we found to work with them was to have them quote separately for the galley and for the accommodation. That wont be enough for what you have planned. Let me know what you think. If you like we can give them the heads up and have their estimator in when you dock.

Sales and Marketing Manager:

Superior Steam & Vac Ltd, www.supersteamteam.ca

Victoria JetVac Power Vac Ltd, www.jetvacpowervac.com

SRS, www.srsinterceptor.com

250-744-8884 Ext 1

Fax: 1-888-596-5591

Victoria JetVac PowerVac Ltd. 250.652.2162

Regards, Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: 2018-April-22 1:11 PM

To: Chaikin, Gabriel

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer

Subject: FW: Refit Contracts - Contractors - incl HVAC

Importance: High

Gabe,

Please note that I added another important service to be scheduled:

21. Job # E-49 HVAC Ducting & Cleaning & Inspection. Best if contractor performs before & after photos & video, and includes testing for mold (NWest) & ACM (NWest) prior to cleaning. Pay special attention to the steam / solvent cleaning of Galley Range ducting.

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: April-22-18 10:48 AM

To: CCGS-NGCC, Bartlett Captain

Cc: Chaikin Gabriel

Subject: FW: Refit Contracts - Contractors

Importance: High

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From: CCGS-NGCC, Bartlett Chief Engineer

Sent: April-20-18 6:38 PM

To: Chaikin Gabriel

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer

Subject: Refit Contracts - Contractors

Importance: High

Gabe,

Here's a list of most significant outstanding Contracts to schedule: (Note that the ship will want to schedule the dates for the first 8 contracts)

- 1. Periodic (Annual) Safety Inspection. Deck & ER. 2 days.
- 2. ... + Fire & Boat Drills
- 3. Load Line Inspec.
- 4. Fire Detection System (<u>after</u> Notifier Panel has been relocated). We should get Vikings approval for "insert" (which may not allow sufficient cooling air flow).
- 5. Fixed Fire-Fighting systems Insp (+ portables)
- 6. Sprinker Syst Annual
- 7. RPBA / Backflow Preventer Service
- 8. Health Canada
- 9. ACM Pre-Testing (NWest Enviro). Meeting required between Captain, Chief Eng, RDPA, Maint Manager & NWest Consultant to establish objectives (her request).
 - 1. ACM Pre-Testing (NWest Enviro). Meeting required between Captain, Chief Eng, RDPA, Maint Manager & NWest Consultant to establish objectives (her request).
 - Windlass Brake Bands
 - Bridge Console Dust Swipes (to determine if previous attempts at abatement were at all effective)
 - Wiring within other of ship's panels? (Megger Survey)
 - Job # E-49 HVAC Ducting for mold (NWest) & ACM (NWest) prior to cleaning.
 - 2. Dust sampling above deckhead panels, particularly in accommodation (and air sampling in Supply Officer's Office over 12 hour duration where above deckhead space is open to the office).
 - 3. Dust sampling above wireways, both above deckhead panels and open wireways in Engine Room and throughout the ship.
 - 4. Electronics / Radio Room
 - 5. Gym
 - 6. More testing while underway in rough water conditions in work spaces and cabins, over a 12 hour operational time interval, (and preferably after a 12 hour operational period and preferably in rough seas), in particular aft Oilers cabin (where ACM fiber count was previously measured high) & Supply Officers cabins, and in "Upper Deck" spaces where less of the ACM bulkhead panels have been removed more vibration & ship flexing of ACM bulkheads chafing-rubbing.
 - 7. Air sampling in Cadets Penthouse (Deckhead panels open to area above.)
 - 8. Dust swap in Bridge Fire Panel console.
 - 9. Air sampling on bridge (no fresh air to supplement / dilute results

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- 10. More wiring & pump & valve packing materials ask asking if there is truly any significant risk is cutting these materials with sharp tools.
- 10. NWest Enviro: ACM work consultant to oversee ACM work, including Notifier Fire Panel Relocation & other work, depending on results of pre-test Hazardous Material Assessments.
- 11. Finning Cody
- 12. United Engineering. Port Hole repairs (D-01 & D-02). Not an easy job, but Jeff did a great job on Senior's Cabin last year.
- 13. D-06 Nav Light Shroud Repairs. United Eng?
- 14. D-28 & D-04b Supply Officer's Cabin Upgrade. Pronautic?
- 15. E-60 Fuel Meters. What is involved in this project? And who is doing it?

16. VP Systems

- E-06 Allied Crane Servicing.
- Annual Service (Capt.Shuckburg says he wants it maintained to mfg standards which includes annual overhaul of winch although Randy / Laurier & I / Bartlett have been overhauling it on 5 year basis due to low running hours but brake did fail last patrol).
- Winch Overhaul At least Brake replacement.
- Selector Valve Replacement.
- 17. E-11 Aft Capstan Overhaul 5 year survey
- 18. E-12 Aft Deck Powerpack 5 Year Survey. 2 Pumps & 2 Motors (latter for Emery)
- 19. Emery Electric.
 - E-50 Accomodation Vent Fan & Motor Service
 - Additional vent fan(s) according to scheduled servicing list
 - *** EL-27 Galley Exhaust Range Hood Controls Replacement & Upgrade (repairing shutting down of galley for at least 1 full day). New equipment in Depot 21
 - E-12 Aft Deck PowerPack Motor x 2 Service

20. KOHO Electrical.

- EL-01, R-60, El-20, EL-18 Cable Transit. None identified for testing, but estimated 75% remain unchecked.
- EL-03 Transformer Service (Follow up to previous Refit)
- EL-05 UPS 1&2 Annual Service
- *** El-26 Ships Wiring Condition Assessment (follow-up to previous Refit) Crucial for Ship Condition Survey
- 21. Job # E-49 HVAC Ducting & Cleaning & Inspection. Best if contractor performs before & after photos & video, and includes testing for mold (NWest) & ACM (NWest) prior to cleaning. Pay special attention to the steam / solvent cleaning of Galley Range ducting.
- 22. Others / Misc; Hermont (OWS OCM), Island Temp (Refrigeration Leak Checks), etc.

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

Docu<u>s</u>்டுடுத் Information Act / Document divulgué en vertu

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

May 14, 2018 1:10 PM

To:

Cc: Subject: CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Senior Engineer

RE: Bartlett - ACM & Hazardous Materials Assessment Testing - Ma15th at VCGB

Good Day

Yes. That will probably be me, but Senior or other engineer may be able to step in, except that only Gord & myself have had previous asbestos experience. ©

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: May-14-18 11:11 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Thank you Ross,

I am developing a work plan for this project.

Just wanted to ensure that someone familiar with the refit work will be available tomorrow to work with _____on

identifying specific sampling locations.



Senior Project Manager North West Environmental Group Ltd.

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 3:37 PM

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Importance: High

Hi . Many thanks for elaboration. Please see embedded comments.

Have a great weekend.

Ross McKenzie

Chief Engineer, CCGS Bartlett

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Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: May-11-18 2:38 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin

Gabriel

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Hi Ross,

Our approach to accessing the panels would be to have a HEPA vacuum present, carefully open the access door/panel and insert the vacuum nozzle into the console to generate minor negative pressure. Personnel accessing the console would be using PPE including a half-face respirator and disposable coveralls and other personnel not directly involved in the access should be kept out of the area. Be prepared to clean (HEPA vacuum and wipe) the access door/panel prior to closing up.

If it is federal personnel conducting this activity, than an NOP is not required.

If the work is sub-contracted than the contractors would fall under WorkSafeBC and an NOP would be filed. Air monitoring would not be required for this activity.

As far as the refit testing work we have a few preliminary questions in red below:

- 1. Windlass Brake Bands, X2
- 2. Fire Main Insulation various & many locations.
- 3. Watertight Doors (sample highest concerns of 5 doors) What part of the door is to be tested (gasket, door interior, paint, etc.)?

Either I can leave that to you or point out something I may have missed as part of the Hazardous Materials Assessment, (presuming I am correct that a HMA is required for jobs that we are assigning to a contractor on our premises), or we can look at the 5 doors and simply do a TEM Swipe. There will be ACM bulkhead concerns regarding the 2 Upper Deck Accommodation Doors, and perhaps duct seal/putty & transit sealant if that is a concern. RM.

Other areas of Primary concern for us to sub-contract work:

- 1. Bridge Fire Panel Consoles x5 + MCR Console TEM Swipe.
- 2. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway. Are these wipe samples as well? Yes. RM.
- 3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
- 4. Re: HVAC Ducting. TEM Swipe and Mold Swipe <u>after</u> Air conditioning has been running for a week. After a week in refit? Yes, weather permitting. The fan room can flood with condensation in the summer if the fan room ducting drain gets plugged, and the main deck "Poop Deck" electric heaters tend to ground 100% after AC's been running for a while (ie the electric "insulators" at the electric heater junction points absorb so much water that the hull becomes part of the electric circuit as much as the wires. And my concern here is that there is a risk of mold when that is happening. RM.
- 5. Port Holes test 2 of many if necessary we know that older marinite bulkheads are 95% asbestos What is being impacted? Asbestos and/or lead? Anti-sweat paint, window putty, bulkhead panels, bulkhead insulation? Probably no testing and no HMA are required here. Laundry Room bukhead is known ACM, but Cabin U-26 (aft of fountain on Upper Deck) bunkhead is non-ACM. Removing bulkhead lining should not be required, but may be worth a look for HMA. I think that a Lead Paint test would be required at least. RM.

s.16(2)

s.19(1)

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6. Engine Room – behind Well-X-Trol tanks Wipes or bulk samples? Asbestos and/or lead? If bulk samples what material is to be tested? This is mostly a follow-up to TEM Swipe to follow up on the previous 13,000 s/cm2 TEM Swipe Jen & Matt did in Jan./Feb.2018. Presumably it got remediated at the time, but Jen said that she should follow up on it when ship returns to Victoria, (at least to attempt to determine source of ACM). RM.



Senior Project Manager North West Environmental Group Ltd.

C.

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 1:44 PM

To: .

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin

Gabriel

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Thank You

Yes, it looks like we'll have to. There is a lot of testing to do.

Based on our understanding of ACM Protocol and our procedures for accessing the Electronic Consoles, I am of the understanding that even opening the doors constitutes Level 2 Asbestos Work and a Notice of Project. Will Air Clearance testing be required? and more importantly will we lose access to the areas where we have known asbestos until clear air sample results are obtained? (ie Bridge & MCR).

Many Thanks,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: May-11-18 1:33 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15t at VCGB

Thank you Ross,

We will definitely get done what we can on Tuesday. However, if we are unable to complete all of the items is there opportunity to return to finish at a later date (Wednesday for instance)?



Senior Project Manager
North West Environmental Group Ltd.

C.

Dรูหุร(2)ent Released Under the Access to Ingหุร(1)ation Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 11:26 AM

To:

Cc: CCGS-NGCC, Bartlett Captain; Chaikin Gabriel; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief

Officer; CCGS-NGCC, Bartlett Engine Room

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15t at VCGB

Importance: High

Good Morning

Thanks for asking. I should have been more direct with my working.

My intention was to test all items on the list, including:

Other areas of secondary concern as follow-up:

- 1. Electronics Room
- 2. Gym
- 3. MCR
- 4. Wireways Alleyways above deckhead panels and engineroom
- 5. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin.
- 6. Upper Deck Alleyway, aft where open to area above cabin deckhead space.

Logic-Reasoning:

- 1. Electronics Room If all of the Electronic consoles are being deemed asbestos hazards, then it is logical to TEM Swipe the "Electronics Room" / "Radio Room".
- 2. Gym We would be remiss to not TEM Swipe the one the area of the ship where crew are breathing the hardest.
- 3. MCR 30,000 s/cm2 ACM found on top of the MCR console. This requires further investigation.
- 4. Wireways Alleyways above deckhead panels and engineroom. This could potentially be the source of our asbestos dust, not he wires themselves, but old ACM "trapped" in the weave & crevices of the wire bundles.
- 5. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin. LogO's cabin & Office are open to Deckhead Space above. Deckhead space in these areas needs to be TEM Swiped. Aft Oilers cabin air test was bad, and not retested. The justification for not retesting sounds like a conjecture; "Asbestos carried on workers clothes from the asbestos worksite" and why was worker allowed to travel from asbestos worksite, through ship and back to cabin without removing coveralls in a decontamination area?
- 6. Upper Deck Alleyway, aft where open to area above cabin deckhead space. We all suspect that area above deckhead panels are the likely source of ACM. This particular alleyway area is open to space above deckhead panels.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

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From:

Sent: May-11-18 10:44 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer **Subject:** RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Good morning Ross,

I have scheduled to attend the vessel on May 15, to address the items below.

He is available late morning.

Is the goal to address all of the primary concerns on May 15 as follows?:

- 1. Windlass Brake Bands. X2
- 2. Fire Main Insulation various & many locations.
- 3. Watertight Doors (sample highest concerns of 5 doors)

Other areas of Primary concern for us to sub-contract work:

- 1. Bridge Fire Panel Consoles x5 + MCR Console TEM Swipe.
- 2. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway.
- 3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
- 4. Re: HVAC Ducting. TEM Swipe and Mold Swipe after Air conditioning has been running for a week.
- 5. Port Holes test 2 of many if necessary we know that older marinite bulkheads are 95% asbestos
- 6. Engine Room behind Well-X-Trol tanks



Senior Project Manager
North West Environmental Group Ltd.

•

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Thursday, May 10, 2018 4:23 PM

To:

Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer Subject: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Importance: High

Good Day

Could a Hazardous Materials Assessment Consultant-Tester be available please on CCGS Bartlett at Victoria CG Base on Tuesday May 15th for Pre-Refit Testing.

Note that "Refit" period is scheduled for May 16th – June 27th.

Note also to please discuss with Gabe. I am acting on Gabe's authority, but he may have not expected that I would include areas of concern outside of Refit contracts.

There is not a lot of pre-Refit work that is essential to complete.

Areas & materials that the contractors have asked us to test are: possibly requiring not just ACM testing, but also Hazardous Materials Assessments (if this is mandatory – regulatory).

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- 1. Windlass Brake Bands. X2
- 2. Fire Main Insulation various & many locations.
- 3. Watertight Doors (sample highest concerns of 5 doors)

Other areas of Primary concern for us to sub-contract work:

- 1. Bridge Fire Panel Consoles x5 + MCR Console TEM Swipe.
- 2. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway.
- 3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
- 4. Re: HVAC Ducting. TEM Swipe and Mold Swipe after Air conditioning has been running for a week.
- 5. Port Holes test 2 of many if necessary we know that older marinite bulkheads are 95% asbestos
- 6. Engine Room behind Well-X-Trol tanks

Other areas of secondary concern as follow-up:

- 1. Electronics Room
- 2. Gym
- 3. MCR
- 4. Wireways Alleyways above deckhead panels and engineroom
- 5. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin.
- 6. Upper Deck Alleyway, aft where open to area above cabin deckhead space.

I think that for 1 day, this wold be a good start, and Matt can carry on from here.

Respectfully,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

Assamoi Assi

Sent:

May 15, 2018 7:19 PM

To:

CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Engine Room

Subject:

Fwd: Asbestos Abatement - please note more changes to itinerary

Hi Trish,

Thank you for your email.

I will be present to the training, but I would probably leave earlier

On May 7, 2018, at 11:58 AM, McLaren, Patricia < Patricia. McLaren@dfo-mpo.gc.ca > wrote:

Hi Assamoi,

I'm sorry to have to send you yet another email with changes to the Asbestos Abatement itinerary, but here it is:

New start and end times:

Thursday, May 17: **0830 – 1500**

Friday, May 18: **0830 – 1630** (there is a chance you may be able to leave a little early if you have to make a flight that evening)

Course location remains to be the WorkBC Boardroom at 102-415 Gorge Rd, Victoria Sorry about all the changes!

We've also been thinking about the commute. Julie Hagedorn may be in touch with you shortly to discuss carpooling options since the course is across town.

Cheers,

Trish McLaren IBMS Training Unit Canadian Coast Guard | Garde Côtière Canadienne 25 Huron Street | 25 rue Huron Victoria, BC Canada, V8V 4V9

telephone | téléphone : 250-480-2952

email | courriel : Patricia.McLaren@dfo-mpo.gc.ca

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- 9. Electronics Room
- 10. Gym
- 11. MCR
- 12. Wireways Alleyways above deckhead panels and engineroom
- 13. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin.
- 14. Upper Deck Alleyway, aft where open to area above cabin deckhead space.

Thanks You,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: May-15-18 12:41 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse;

Subject: FW: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Hi again Ross,

In addition to the nine items below, we will also:

- 10. TEM wipe sample dust deposits in the electronics room
- 11. TEM wipe sample dust deposits in the gym
- 12. TEM wipe sample dust deposits atop the MCR console
- 13. TEM wipe sample wireways in the alleyways above deckhead panels and in the engine room focusing on suspect ACM dust trapped in the weave of the wires versus the wires themselves.

In a previous correspondence you make reference to an air test in the Aft Oiler's Cabin that was bad. I had a look at some recent data that showed good results so please let me know if I am missing something here. Thank you



Senior Project Manager
North West Environmental Group Ltd.

C

From:

Sent: Tuesday, May 15, 2018 12:21 PM **To:** 'CCGS-NGCC, Bartlett Chief Engineer'

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse;

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Hi Ross,

I won't dispatch Shaun until I hear from you.

Please review the initial work plan below and let me know if it requires modification:

- 1. Windlass Brake Bands, 2 bulk asbestos samples (Clutch was mentioned in a previous correspondence so please confirm whether it is to be impacted).
- 2. Fire Main Insulation, bulk asbestos sampling Various locations.
- 3. Watertight Doors, 5 doors of highest concern Sampling will depend on anticipated refit work. Sampling may include gasket/putty (not sure about aforementioned TEM sampling on the doors)
- 4. Bridge Fire Panel Consoles (5) + MCR Console TEM Wipe sampling (within the consoles).
- 5. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway TEM Wipe
- 6. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels TEM Wipe (Do we want to coordinate this sampling in conjunction with the mold sampling after a week of air conditioning in refit.
- 7. Re: HVAC Ducting. Mold wipe after Air conditioning has been running for a week.
- 8. Port Holes test 2 of many if necessary Lead paint sampling
- 9. Engine Room behind Well-X-Trol tanks TEM wipe sampling



Senior Project Manager
North West Environmental Group Ltd.

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 3:37 PM

To:

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Importance: High

Hi Many thanks for elaboration. Please see embedded comments.

Have a great weekend.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: May-11-18 2:38 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin

Gabriel

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Hi Ross,

Our approach to accessing the panels would be to have a HEPA vacuum present, carefully open the access door/panel and insert the vacuum nozzle into the console to generate minor negative pressure. Personnel accessing the console would be using PPE including a half-face respirator and disposable coveralls and other personnel not directly involved in the access should be kept out of the area. Be prepared to clean (HEPA vacuum and wipe) the access door/panel prior to closing up.

If it is federal personnel conducting this activity, than an NOP is not required.

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As far as the refit testing work we have a few preliminary questions in red below:

- Windlass Brake Bands. X2
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Either I can leave that to you or to point out something I may have missed as part of the Hazardous Materials Assessment, (presuming I am correct that a HMA is required for jobs that we are assigning to a contractor on our premises), or we can look at the 5 doors and simply do a TEM Swipe. There will be ACM bulkhead concerns regarding the 2 Upper Deck Accommodation Doors, and perhaps duct seal/putty & transit sealant if that is a concern. RM.

Other areas of Primary concern for us to sub-contract work:

- 1. Bridge Fire Panel Consoles x5 + MCR Console TEM Swipe.
- 2. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway. Are these wipe samples as well? Yes. RM.
- 3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
- 4. Re: HVAC Ducting. TEM Swipe and Mold Swipe <u>after</u> Air conditioning has been running for a week. After a week in refit? Yes, weather permitting. The fan room can flood with condensation in the summer if the fan room ducting drain gets plugged, and the main deck "Poop Deck" electric heaters tend to ground 100% after AC's been running for a while (ie the electric "insulators" at the electric heater junction points absorb so much water that the hull becomes part of the electric circuit as much as the wires. And my concern here is that there is a risk of mold when that is happening. RM.
- 5. Port Holes test 2 of many if necessary we know that older marinite bulkheads are 95% asbestos What is being impacted? Asbestos and/or lead? Anti-sweat paint, window putty, bulkhead panels, bulkhead insulation? Probably no testing and no HMA are required here. Laundry Room bukhead is known ACM, but Cabin U-26 (aft of fountain on Upper Deck) bunkhead is non-ACM. Removing bulkhead lining should not be required, but may be worth a look for HMA. I think that a Lead Paint test would be required at least. RM.
- 6. Engine Room behind Well-X-Trol tanks Wipes or bulk samples? Asbestos and/or lead? If bulk samples what material is to be tested? This is mostly a follow-up to TEM Swipe to follow up on the previous 13,000 s/cm2 TEM Swipe Jen & Matt did in Jan./Feb.2018. Presumably it got remediated at the time, but impossed that she should follow up on it when ship returns to Victoria, (at least to attempt to determine source of ACM). RM.



Senior Project Manager
North West Environmental Group Ltd.

C

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 1:44 PM

To:

Ds.16(2)ent Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer; Chaikin

Gabriel

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Thank You.

Yes, it looks like we'll have to. There is a lot of testing to do.

Based on our understanding of ACM Protocol and our procedures for accessing the Electronic Consoles, I am of the understanding that even opening the doors constitutes Level 2 Asbestos Work and a Notice of Project. Will Air Clearance testing be required? and more importantly will we lose access to the areas where we have known asbestos until clear air sample results are obtained? (ie Bridge & MCR).

Many Thanks,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: May-11-18 1:33 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15t at VCGB

Thank you Ross,

We will definitely get done what we can on Tuesday. However, if we are unable to complete all of the items is there opportunity to return to finish at a later date (Wednesday for instance)?



Senior Project Manager
North West Environmental Group Ltd.

C. (Primary)

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Friday, May 11, 2018 11:26 AM

To:

Cc: CCGS-NGCC, Bartlett Captain; Chaikin Gabriel; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief

Officer; CCGS-NGCC, Bartlett Engine Room

Subject: RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15t at VCGB

Importance: High

Good Morning

Thanks for asking. I should have been more direct with my working.

My intention was to test all items on the list, including:

Other areas of secondary concern as follow-up:

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- 1. Electronics Room
- 2. Gym
- 3. MCR
- 4. Wireways Alleyways above deckhead panels and engineroom
- 5. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin.
- 6. Upper Deck Alleyway, aft where open to area above cabin deckhead space.

Logic-Reasoning:

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- 2. Gym We would be remiss to not TEM Swipe the one the area of the ship where crew are breathing the hardest.
- 3. MCR 30,000 s/cm2 ACM found on top of the MCR console. This requires further investigation.
- 4. Wireways Alleyways above deckhead panels and engineroom. This could potentially be the source of our asbestos dust, not he wires themselves, but old ACM "trapped" in the weave & crevices of the wire bundles.
- 5. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin. LogO's cabin & Office are open to Deckhead Space above. Deckhead space in these areas needs to be TEM Swiped. Aft Oilers cabin air test was bad, and not retested. The justification for not retesting sounds like a conjecture; "Asbestos carried on workers clothes from the asbestos worksite" and why was worker allowed to travel from asbestos worksite, through ship and back to cabin without removing coveralls in a decontamination area?
- Upper Deck Alleyway, aft where open to area above cabin deckhead space. We all suspect that area above deckhead panels are the likely source of ACM. This particular alleyway area is open to space above deckhead panels.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

rivili.

Sent: May-11-18 10:44 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer **Subject:** RE: Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Good morning Ross,

I have scheduled to attend the vessel on May 15, to address the items below.

He is available late morning.

Is the goal to address all of the primary concerns on May 15 as follows?:

- 1. Windlass Brake Bands. X2
- 2. Fire Main Insulation various & many locations.
- 3. Watertight Doors (sample highest concerns of 5 doors)

Other areas of Primary concern for us to sub-contract work:

1. Bridge Fire Panel Consoles x5 + MCR Console – TEM Swipe.

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- 2. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway.
- 3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
- 4. Re: HVAC Ducting. TEM Swipe and Mold Swipe after Air conditioning has been running for a week.
- 5. Port Holes test 2 of many if necessary we know that older marinite bulkheads are 95% asbestos
- 6. Engine Room behind Well-X-Trol tanks



Senior Project Manager North West Environmental Group Ltd.

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: Thursday, May 10, 2018 4:23 PM

To:

Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer **Subject:** Bartlett - ACM & Hazardous Materials Assessment Testing - May 15th at VCGB

Importance: High

Good Day

Could a Hazardous Materials Assessment Consultant-Tester be available please on CCGS Bartlett at Victoria CG Base on Tuesday May 15th for Pre-Refit Testing.

Note that "Refit" period is scheduled for May 16th – June 27th.

Note also to please discuss with Gabe. I am acting on Gabe's authority, but he may have not expected that I would include areas of concern outside of Refit contracts.

There is not a lot of pre-Refit work that is essential to complete.

Areas & materials that the contractors have asked us to test are: possibly requiring not just ACM testing, but also Hazardous Materials Assessments (if this is mandatory – regulatory).

- 1. Windlass Brake Bands, X2
- 2. Fire Main Insulation various & many locations.
- 3. Watertight Doors (sample highest concerns of 5 doors)

Other areas of Primary concern for us to sub-contract work:

- 1. Bridge Fire Panel Consoles x5 + MCR Console TEM Swipe.
- 2. Above Deckhead Panels. Bridge, Cadets Cabin, Logistics Officer Cabin, "Upper Deck" (Lower Deck Accommodation) Alleyway.
- 3. Re: HVAC / Heating-Ventilation Ducting. Above deckhead panels. Asbestos TEM Swipe
- 4. Re: HVAC Ducting. TEM Swipe and Mold Swipe after Air conditioning has been running for a week.
- 5. Port Holes test 2 of many if necessary we know that older marinite bulkheads are 95% asbestos
- 6. Engine Room behind Well-X-Trol tanks

Other areas of secondary concern as follow-up:

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- 1. Electronics Room
- 2. Gym
- 3. MCR
- 4. Wireways Alleyways above deckhead panels and engineroom
- 5. Logistics Officer Office & Cabin (in vicinity of openings to over deckhead), Aft Oilers cabin.
- 6. Upper Deck Alleyway, aft where open to area above cabin deckhead space.

I think that for 1 day, this wold be a good start, and Matt can carry on from here.

Respectfully,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018

Client Job or PO#: NEED Project number: 35254

Sample No	Location	Date Analysed	Anaiyst	Description	Phase	8	Asbestos	8	Other Materials	8	Comments
35254-1b	Port Windlass	May-17-2018	OĽ	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	O.	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	QC	Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver	Pipe Wrap - White/Silver	20	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	e.	Pipe Insulation - Textile Pipe Insulation - over Fibreglass	Pipe Insulation - Yellow	20	None Detected	0	Glass	100	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	αr	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	αc	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	20	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	αc	Pipe Insulation - Textile Pipe Insulation - over Fibreglass	Pipe Insulation - Yellow	05	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	Œ	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



LAB# 202314

1/2

Sample No	Location	Date Analysed	Analyst	Description	Phase	8	Asbestos	8	Other Materials	8	Comments
35254-7b	Auxiliary Machine Space May-17-2018 (Fire Station 18)	May-17-2018	OT.	Teal Gasket	Teal	100	100 None Detected	0	Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire May-17-2018 Station 16)	May-17-2018	Оľ	Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver	Pipe Wrap - White/Silver	50	50 None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire May-17-2018 JD Station 16)	May-17-2018	ЭD	Pipe Insulation - Textile Pipe Insulation - over Fibreglass Yellow	Pipe Insulation - Yellow	50	50 None Detected	0	0 Glass	100	
35254-9b	Main Engine Room (Fire May-17-2018 JD Station 16)	May-17-2018	Œ	Black Gasket	Black	100	100 None Detected	0	O Cellulose (15%) Non-Fibrous (85%)	100	



LAB# 202314

000953

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514632 Client No.: 35254-13b Location: Bridge-Fire Panel Console (Mid Port Concentration (s/cm²): 178000

Console)

Area (cm²): 100 **Density (s/mm²): 1850** Asbestos Type(s): Chrysotile Amosite

Lab No.:6514633 Client No.: 35254-14b Location: A.M.S. (Wireway Above Sewage

Tank)

Concentration (s/cm²): 222000 Asbestos Type(s): Chrysotile

Area (cm²): 50

Density (s/mm²): 231

Lab No.:6514634

Location: M.E.R. (Wireway Adjacent To Escape Concentration (s/cm²): 111000

Client No.:35254-15b

Hatch)

Asbestos Type(s): Chrysotile Tremolite Amosite

Area (cm2): 100

Density (s/mm²): 57.7

Lab No.:6514635 Client No.: 35254-16b **Location:** Bridge-(Forward Port Console)

Area (cm2): 100

Concentration (s/cm²): 64800

Density (s/mm²): 135

Asbestos Type(s): Amosite Chrysotile

Lab No.:6514636 Client No.: 35254-17b **Location:** Bridge-(Forward Middle Console)

Area (cm2): 100

Density (s/mm²): 231

Concentration (s/cm²): 55500

Asbestos Type(s): Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:29

Approved By:

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514637 Client No.: 35254-18b

Area (cm²): 100

Location: Bridge-(Forward Starboard Console) Concentration (s/cm²): <9250

Density (s/mm²): <9.62

Asbestos Type(s): None Detected

Lab No.:6514638 **Location:** Bridge-(Mid Starboard Console)

Area (cm²): 100

Concentration (s/cm²): 27800

Asbestos Type(s): Amosite Chrysotile

Lab No.:6514639 Client No.: 35254-20b

Client No.:35254-19b

Location: MCR-Console

Density (s/mm²): 115

Area (cm²): 100

Concentration (s/cm²): 17000

Density (s/mm²): 106

Asbestos Type(s): Chrysotile Amosite

Lab No.:6514640 Client No.: 35254-21b

Location: MCR-Top Of Console

Area (cm²): 100

Density (s/mm²): 67.3

Concentration (s/cm²): 16200 Asbestos Type(s): Chrysotile

Lab No.:6514641 Client No.: 35254-22b

Location: MCR-Port Side-Top Of Ducting

Area (cm²): 100

Density (s/mm²): 28.8

Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile Amosite

Lab No.:6514642 Client No.: 35254-23b

Location: MCR-Port Side-Wireway Adjacent

Switch Console

Area (cm²): 100

Concentration (s/cm²): 6480 Asbestos Type(s): Chrysotile

Density (s/mm²): 67.3

Concentration (s/cm²): 27800

Client No.: 35254-24b

Lab No.:6514643

Location: Upper D: Starboard Aft Alleyway-

Deckhead Cavity Area (cm2): 100

Density (s/mm²): 57.7

Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 5/28/2018 4:18:29

Page 2 of 6

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Project: CCGS Bartlett-General Hazmat Consulting

Concentration (s/cm²): 204000

Asbestos Type(s): Chrysotile

Concentration (s/cm²): <4630

Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Asbestos Type(s): Chrysotile Actinolite

Asbestos Type(s): None Detected

Asbestos Type(s): Chrysotile Amosite

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514644 Client No.: 35254-25b

Location: Upper D: Stbd Aft Watertight Door-

DH Cavity Area (cm2): 100

Density (s/mm²): 212

Lab No.:6514645 Client No.: 35254-26b Location: Upper D: Aft Oilers Cabin-Deckhead Concentration (s/cm²): 37000

Area (cm2): 100

Density (s/mm²): 19.2

Lab No.:6514646 Client No.: 35254-27b Location: Poop D: (P-2) Logistics Office-

Deckhead Cavity

Density (s/mm²): <9.62

Area (cm2): 100

Lab No.:6514647

Client No.: 35254-28b

Lab No.:6514648

Lab No.:6514649

Client No.: 35254-30b

Location: N. Bridge D: (N-5) Cadet Cabin-

Area (cm²): 100

Deckhead Cavity

Density (s/mm²): <9.62

Location: N. Bridge D: Bridge-Deckhead Cavity Concentration (s/cm²): 16200

Client No.: 35254-29b Area (cm2): 100

Density (s/mm²): 67.3

Wireway)

Location: M.E.R.-Aft Port (Metal Plate Beneath Concentration (s/cm²): <4630 Asbestos Type(s): None Detected

Area (cm2): 50

Density (s/mm²): <9.62

Lab No.:6514650 Location: Gym-Top Of Electrical Cabinet

Client No.: 35254-31b Area (cm2): 100

Density (s/mm²): 86.5

Concentration (s/cm²): 83300

Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 5/28/2018 4:18:29

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514651 Client No.:35254-31 Location: Additional Sample Received

Area (cm²): 100 **Density (s/mm²):** 9.62

Concentration (s/cm²): 925 Asbestos Type(s): Actinolite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:29

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 5/28/2018 4:18:29

Page 5 of 6



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

Dated: 5/28/2018 4:18:29 Page 6 of 6

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514632

Client No.: 35254-13b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings: 2

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0260 Sensitivity (s/mm²):38.5

Detection Limit (s/cm²):3700

Micrograph Number:

EDXA Spectrum ID: 1:14:07PM

Lab No.:6514633 Client No.: 35254-14b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings:8 Opening Area (mm²):0.013

Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Bridge-Fire Panel Console (Mid Port

Console)

Asbestos Structures: 48

Structures < 5 Microns: 44 Structures $\geq 5 \mu m$: 4

Structure Density (s/mm²): 1850

Structure Concentration (s/cm²): 178000

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm²):50

Location: A.M.S. (Wireway Above Sewage

Tank)

Asbestos Structures: 24

Structures < 5 Microns: 22 Structures $\geq 5 \mu m$: 2

Structure Density (s/mm²): 231

Structure Concentration (s/cm²): 222000

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<38.5

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Filter Type: MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²): <9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 1 of 12

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Volume Filtered (mL):0.25

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

Detection Limit (s/cm²): 18500

Dilution Factor (mL):50 **Grid Openings:8**

Sensitivity (s/mm²):9.62

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Filter Type:MCE

Pore Size (μm): 0.45

Non-Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Type(s):

SiAl - Other Fiber

Non-Asbestos Structures: 22

Structure Density (s/mm²):212

Structure Concentration (s/cm²): 102000

Non-Asbestos Structures: None Detected

Structure Concentration (s/cm²):<18500

Structure Density (s/mm²):<9.62

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514634

Client No.: 35254-15b

Asbestos Structures: 6

Structures < 5 Microns: 3

Structure Density (s/mm²): 57.7

Structure Concentration (s/cm²): 111000

Asbestos Type(s):

Chrysotile

Micrograph Number:

EDXA Spectrum ID:2:17:13PM

Lab No.:6514635

Client No.: 35254-16b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): 100

Location: M.E.R. (Wireway Adjacent To Escape Filter Size (mm²): 962

Structures $\geq 5 \mu m$: 3

Tremolite

Amosite Area Sampled (cm2): 100

Location: Bridge-(Forward Port Console)

Asbestos Structures: 14

Structures < 5 Microns: 12

Structures $\geq 5 \mu m$: 2

Structure Density (s/mm²): 135

Structure Concentration (s/cm²): 64800

Asbestos Type(s):

Amosite

Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project: C

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514636

Client No.: 35254-17b

Volume Filtered (mL): 2 Dilution Factor (mL): 50 Grid Openings: 8

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62 Detection Limit (s/cm²): 2310

Micrograph Number: EDXA Spectrum ID: Area Sampled (cm²): 100

Location: Bridge-(Forward Middle Console)

Asbestos Structures: 24

Structures < 5 Microns: 21 Structures $\ge 5 \mu m$: 3

Structure Density (s/mm²): 231 Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 24

Structure Density (s/mm²):231

Structure Concentration (s/cm²):55500 Non-Asbestos Type(s):

SiAl - Other Fiber SiMg - Talc

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank Tue

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Client: North West Environmental Group Ltd.

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Victoria BC V8T 2W1

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514637

Client: NOR765

Client No.: 35254-18b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Area Sampled (cm²):100

Location: Bridge-(Forward Starboard Console)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²): <9250

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514638 Client No.: 35254-19b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8 Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Bridge-(Mid Starboard Console)

Asbestos Structures: 12

Structures < 5 Microns: 11 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 115

Structure Concentration (s/cm²): 27800

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<2310 Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

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Date Analyzed:

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Signature:

Analyst:

Dated: 5/28/2018 4:18:31

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Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514639

Client No.: 35254-20b

Volume Filtered (mL):3 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104

Sensitivity (s/mm²): 9.62

Detection Limit (s/cm²): 1540

Micrograph Number:

EDXA Spectrum ID: Lab No.:6514640

Client No.: 35254-21b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104

Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):23

Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: MCR-Console

Asbestos Structures: 11

Structures < 5 Microns: 10

Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 106

Structure Concentration (s/cm²): 17000

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm²): 100

Location: MCR-Top Of Console

Asbestos Structures: 7

Structures \leq 5 Microns: 6 Structures \geq 5 μ m: 1

Structure Density (s/mm²): 67.3

Structure Concentration (s/cm²): 16200

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<1540

Non-Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project: Co

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514641

Client No.: 35254-22b

Volume Filtered (mL): 0.25 Dilution Factor (mL): 50

Grid Openings: 8
Opening Area (mm²): 0.013

Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):18500

Micrograph Number:

EDXA Spectrum ID: Lab No.:6514642

Client No.:35254-23b

Volume Filtered (mL): 5 Dilution Factor (mL): 50 Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm2): 100

Location: MCR-Port Side-Top Of Ducting

Asbestos Structures: 3

Structures < 5 Microns: 3
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 28.8
Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm²): 100

Location: MCR-Port Side-Wireway Adjacent

Switch Console

Asbestos Structures: 7

Structures < 5 Microns: 4 Structures $\ge 5 \mu m$: 3

Structure Density (s/mm²): 67.3 Structure Concentration (s/cm²): 6480

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

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Client: North West Environmental Group Ltd.

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Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514643

Client No.: 35254-24b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):4630

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514644

Client No.: 35254-25b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Upper D: Starboard Aft Alleyway-

Deckhead Cavity

Asbestos Structures: 6

Structures < 5 Microns: 5 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 57.7 Structure Concentration (s/cm²): 27800

Asbestos Type(s):

Chrysotile

Amosite

Area Sampled (cm²): 100

Location: Upper D: Stbd Aft Watertight Door-

DH Cavity

Asbestos Structures: 22

Structures < 5 Microns: 16 Structures $\geq 5 \mu m$: 6

Structure Density (s/mm²): 212

Structure Concentration (s/cm²): 204000

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²): <4630

Non-Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018 05/23/2018

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Signature:

Analyst:

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Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514645

Client No.: 35254-26b

Volume Filtered (mL): 0.25 Dilution Factor (mL): 50

Grid Openings:8

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62 Detection Limit (s/cm²): 18500 Area Sampled (cm²): 100
Location: Upper D: Aft Oilers Cabin-Deckhead
Cavity

Asbestos Structures: 2

Structures < 5 Microns: 2 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 37000

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514646 Client No.:35254-27b

Volume Filtered (mL): 1 Dilution Factor (mL): 50 Grid Openings: 8

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62 Detection Limit (s/cm²): 4630

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm2): 100

Location: Poop D: (P-2) Logistics Office-

Deckhead Cavity

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <4630

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s):

None Detected

|--|

Date Received:

5/18/2018

Date Analyzed:

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Analyst:

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Approved By:

Frank Smarfel

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project: (

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514647

Client No.: 35254-28b

Volume Filtered (mL): 0.5 Dilution Factor (mL): 50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Area Sampled (cm²): 100

Location: N. Bridge D: (N-5) Cadet Cabin-

Deckhead Cavity

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures \geq 5 μ m: None Detected Structure Density (s/mm²): \leq 9.62

Structure Concentration (s/cm²): <9250 Asbestos Type(s):

Asbestos Type(
None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514648

Client No.: 35254-29b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID: Area Sampled (cm²):100

Location: N. Bridge D: Bridge-Deckhead Cavity

Asbestos Structures: 7

Structures < 5 Microns: 6 Structures $\ge 5 \mu m$: 1

Structure Density (s/mm²): 67.3

Structure Concentration (s/cm²): 16200

Asbestos Type(s):

Chrysotile Actinolite Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

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Analyst:

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Volume Filtered (mL):2

Dilution Factor (mL):50 **Grid Openings:8**

Sensitivity (s/mm²):9.62

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

5/23/2018 Report Date:

Report No.: 564091 - TEM Dust

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514649 Area Sampled (cm²):50

Client No.: 35254-30b Location: M.E.R.-Aft Port (Metal Plate Beneath

Wireway)

Asbestos Structures: None Detected

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62

Structure Concentration (s/cm²): <4630

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s): None Detected

Detection Limit (s/cm²):4630

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514650

Client No.: 35254-31b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Gym-Top Of Electrical Cabinet

Asbestos Structures: 9

Structures < 5 Microns: 9

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 86.5

Structure Concentration (s/cm²): 83300

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Page 10 of 12

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514651

Client No.: 35254-31

Volume Filtered (mL):5 Dilution Factor (mL):50 **Grid Openings:8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Additional Sample Received

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 9.62 Structure Concentration (s/cm²): 925

Asbestos Type(s): Actinolite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²): <925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

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Client: North West Environmental Group Ltd.

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Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Dated: 5/28/2018 4:18:31 Page 12 of 12

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.: 564104 - Lead Paint

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

LEAD PAINT SAMPLE ANALYSIS SUMMARY

6514792 Lab No.: Client No.: 35254-10b

Description: Red Paint On Metal

Result (% by Weight): <0.0062

Location: Auxiliary Machine Space Watertight Door Result (ppm):

Comments:

Lab No.: 6514793 Client No.: 35254-11b

Description: White Paint On Metal

Result (% by Weight): 0.96 9600

Result (ppm):

Location: Main Engine Rm Aft Bulkhead

Comments:

Lab No.: 6514794 Client No.: 35254-12b Location:

Description: Black Paint On Metal Port Windlass

Result (% by Weight): <0.0067 Result (ppm):

Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/21/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:37

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.: 564104

564104 - Lead Paint

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Paint

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www iATL com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.

Dated: 5/28/2018 4:18:37

Ayres, Bob

From:

Ayres, Bob

Sent:

Tuesday, May 29, 2018 2:07 PM

To:

Ormiston, Glenn; Jersch, Russell; Bennett, Bob; Wright, Edward; Chaikin, Gabriel; McNish, Joanne; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca)

Cc:

Carrigan, Kevin

Subject:

FW: Bartlett Results

Attachments:

35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

FYI, my note to Director of CGSS in HQ.

Bob

From: Ayres, Bob

Sent: May-29-18 1:45 PM **To:** Richardson, Dena

Subject: FW: Bartlett Results

Hi Dena,

Just wanting to give you a heads up on the most recent development with the Bartlett and asbestos. FYI, the acting RD Fleet was also planning to notify HQ (DG Ops and perhaps others).

A note of history – the ship was built in 1969 and no doubt had extensive asbestos containing materials (ACM) used in her construction. Asbestos surveys over the years and abatement/remediation efforts have confirmed this.

Asbestos concerns were raised in early 2018 and documented on a series of IIRs, with a focus area being wiring in the bridge consoles that had not previously been identified as ACM. The ship is two weeks into a refit at Vic Base (with those bridge consoles being among the work) and additional tests were ordered a week ago with results back today.

As you will see by the email below there were both bulks samples and wipe tests. While the analysis of bulk samples came back as negative the dust wipe samples from a variety of locations came back as positive for ACM to varying degrees.

- The bulk tests were done on brake bands, insulations and gaskets and all came back as none detected.
- The wipe tests were done in a variety of wire-ways, deck-heads, cavities, and consoles and results ranged from none detected to high concentrations (as per below)

Shortly after this recent result became known the ME personnel notified the ship, myself and Fleet Management. We met and discussed actions, which included;

- the stop of any work with potential to disturb ACM 9this includes refit work with contractors)
- ME has arranged for environmental specialist consultants to attend the ship tomorrow for further review, assessment and determination of a way forward
- The Bartlett CO, acting RD Fleet and myself met with all Bartlett crew immediately following the meeting to present the news to crew and take any questions there were some questions but the crew appeared to take it in stride, with the understanding that we should know more tomorrow and in the days following.

Important to note is that air tests were conducted throughout the ship, including underway, after the findings earlier this year and all came back as negative.

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There is supposition that the dust sampled in this most recent testing has been present since the time of earlier remediation efforts (perhaps going back decades). I feel this is probable but it is also important to note that some dust with ACM was identified in previously cleaned spaces.

I am assuming you may hear of this so wanted to make sure you were aware. I'll keep you advised.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

From: Chaikin, Gabriel Sent: May-29-18 12:47 PM

To: Ayres, Bob

Subject: FW: Bartlett Results

Bob,

Here are the sample results for the Bartlett. There is quite a bit to unpack here. The summary below is a good start. Note the usual blanket statements and the beginning and the end.

Overall this is not good news. Our hope is that the majority of the findings are very old and have not posed a risk to the crew. The previous air sample results would support that hope as they were all negative for ACM. Of course some of the areas were these sample wipes were taken, were cleaned during the last refit. This shows that indeed there is a lack of encapsulation.

Our next plan will be air sampling throughout the vessel, followed by cleaning, encapsulation and remediation.

Regards,

Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

From:

Sent: 2018-May-29 9:46 AM

To: Chaikin, Gabriel

Cc:

Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

- 1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
- 2. Moderate range (> 10,000 50,000 s/cm2):
 - a. Bridge mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck stb aft alleyway deckhead cavity
 - e. N bridge deck bridge deckhead cavity
- 3. Elevated range (> 50,000 100,000 s/cm2):
 - a. Bridge fwd/port console
 - b. Bridge Fwd middle console
 - c. MCR port side top of ducting
 - d. Upper deck aft oilers cabin deckhead cavity
 - e. Gym top of electrical cabinet
- 4. High range (> 100,000 s/cm2):
 - a. Bridge fire panel console (mid port console)
 - b. AMS wireway above sewage tank
 - c. MER wireway adj. escape hatch
 - d. Upper deck stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting lead-containing paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



Project Manager North West Environmental Group Ltd.

_

From:

Sent: May 29, 2018 8:43 AM

To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>;

Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.

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Thanks for your patience,



Project Manager
North West Environmental Group Ltd.
C.

From: Chaikin, Gabriel <	< <u>Gabriel.Chaikin@dfo-mpo.gc.ca</u> >
--------------------------	------------------------------------------

Sent: May 29, 2018 8:15 AM

To:

Subject: Bartlett Results

Good day and

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.

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Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018

Client Job or PO#: NEED Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-1b	Port Windlass	May-17-2018	JD	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	ÜĹ	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
3525 4-4 b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	JD	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



LAB# 202314

1/2

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Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-7b	Auxiliary Machine Space (Fire Station 18)	May-17-2018	JD	Teal Gasket	Teal	100	None Detected	0	Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire Station 16)	May-17-2018	JD	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire Station 16)	May-17-2018		Pipe Insulation - Textile over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
3525 4 -9b	Main Engine Room (Fire Station 16)	May-17-2018	JD	Black Gasket	Black	100	None Detected	0	Cellulose (15%) Non-Fibrous (85%)	100	



LAB# 202314

2/2

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

> Report No.: 564104 - Lead Paint

Project: CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6514792

Client No.: 35254-10b

Location:

Description: Red Paint On Metal

Auxiliary Machine Space Watertight Door

Result (% by Weight): <0.0062

Result (ppm):

Comments:

6514793 Lab No.: Client No.: 35254-11b

Location:

Description: White Paint On Metal

Main Engine Rm Aft Bulkhead

Result (% by Weight): 0.96

Result (ppm):

Comments:

Lab No.: 6514794 Client No.: 35254-12b

Location:

Description: Black Paint On Metal

Port Windlass

Result (% by Weight): <0.0067

9600

Result (ppm):

Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/21/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:37

Approved By:

Page 1 of 2

Frank E. Ehrenfeld, III

Laboratory Director



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.: 564104 - Lead Paint

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Paint

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

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Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

Insufficient sample provided to perform QC reanalysis (<200 mg)

** Not enough sample provided to analyze (<50 mg)

*** Matrix / substrate interference possible.

Dated: 5/28/2018 4:18:37



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de la Loi sur l'acc 2000 Commerce Parkway Suite B

Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date:

Project:

Report No.: 564091 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting

5/23/2018

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514632

Client No.: 35254-13b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings:2

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0260

Sensitivity (s/mm²):38.5 Detection Limit (s/cm²):3700

Micrograph Number:

EDXA Spectrum ID:1:14:07PM

Lab No.:6514633 Client No.:35254-14b

Volume Filtered (mL): 1 Dilution Factor (mL): 50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Bridge-Fire Panel Console (Mid Port

Console)

Asbestos Structures: 48

Structures < 5 Microns: 44

Structures ≥ 5 µm: 4

Structure Density (s/mm²): 1850

Structure Concentration (s/cm²): 178000

Asbestos Type(s): Chrysotile

Amosite

Area Sampled (cm²):50

Location: A.M.S. (Wireway Above Sewage

Tank)

Asbestos Structures: 24

Structures < 5 Microns: 22 Structures ≥ 5 µm: 2

Structure Density (s/mm²): 231

Structure Concentration (s/cm²): 222000

Asbestos Type(s):

Chrysotile

Filter Type: MCE Filter Size (mm²): 962

Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<38.5

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514634 Area Sampled (cm²):100

Client No.: 35254-15b Location: M.E.R. (Wireway Adjacent To Escape

Amosite

Volume Filtered (mL):0.25 **Asbestos Structures:** 6

Dilution Factor (mL):50

Grid Openings:8 Structures < 5 Microns: 3

Opening Area (mm²):0.013 Structures ≥ 5 µm: 3 Area Analyzed (mm²):0.104 Structure Density (s/mm²): 57.7

Sensitivity (s/mm²):9.62 Structure Concentration (s/cm²): 111000

Detection Limit (s/cm²):18500 Asbestos Type(s):

Chrysotile Micrograph Number: **Tremolite**

EDXA Spectrum ID:2:17:13PM

Lab No.:6514635 Area Sampled (cm²):100

Client No.: 35254-16b Location: Bridge-(Forward Port Console)

Volume Filtered (mL):1 Asbestos Structures: 14 Dilution Factor (mL):50

Grid Openings:8 Structures < 5 Microns: 12 Opening Area (mm²):0.013 Structures ≥ 5 µm: 2

Area Analyzed (mm²):0.104 Structure Density (s/mm²): 135

Sensitivity (s/mm²):9.62 Structure Concentration (s/cm²): 64800 Detection Limit (s/cm²):4630

Asbestos Type(s):

Amosite Micrograph Number: Chrysotile **EDXA Spectrum ID:**

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500 Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: 22

Structure Density (s/mm²):212

Structure Concentration (s/cm²): 102000

Non-Asbestos Type(s): SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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de la Loi sur l'acc 9000 Commerce Parkway Suite B

Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Winter: DC VOTOW

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514636

Client No.: 35254-17b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Bridge-(Forward Middle Console)

Asbestos Structures: 24

Structures < 5 Microns: 21 Structures ≥ 5 µm: 3

Structure Density (s/mm²): 231

Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Amosite Chrysotile Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45 Non-Asbestos Structures:24

Structure Density (s/mm²):231

Structure Concentration (s/cm²):55500

Non-Asbestos Type(s): SiAl - Other Fiber SiMg - Talc

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Stal due

Frank E. Ehrenfeld, III Laboratory Director

Page 3 of 12



Asbestos Testing Laboratories

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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514637 Client No.: 35254-18b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings:8 Opening Area (mm²):0.013 Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):9250 Area Sampled (cm²):100

Location: Bridge-(Forward Starboard Console)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514638 Client No.: 35254-19b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Bridge-(Mid Starboard Console)

Asbestos Structures: 12

Structures < 5 Microns: 11 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 115 Structure Concentration (s/cm²): 27800

Asbestos Type(s):

Amosite Chrysotile Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

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Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



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de la Loi sur l'acc 9000 Commerce Parkway Suite B

Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

victoria BC vo

Asbestos Testing Laboratories

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514639

Client: NOR765

Volume Filtered (mL):3 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²): 1540

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514640 Client No.:35254-21b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8
Opening Area (mm²):0.013

Micrograph Number: EDXA Spectrum ID:

Area Analyzed (mm²):0.013
Sensitivity (s/mm²):9.62
Detection Limit (s/cm²):2310

Detection Limit (s/cm²):2310

Client No.:35254-20b Location: MCR-Console

Asbestos Structures: 11

Area Sampled (cm²):100

Structures < 5 Microns: 10 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 106

Structure Concentration (s/cm²): 17000

Asbestos Type(s): Chrysotile

Amosite

Area Sampled (cm²):100

Location: MCR-Top Of Console

Asbestos Structures: 7

Structures < 5 Microns: 6 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 67.3

Structure Concentration (s/cm²): 16200

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (μm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<1540

Non-Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm): 0.45 <u>Non-Asbestos Structures:</u> None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Emple E. Ehrenfold III

Frank E. Ehrenfeld, III Laboratory Director

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de la Loi sur l'acc 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: **CCGS Bartlett-General Hazmat Consulting**

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514641

Client No.: 35254-22b

Volume Filtered (mL):0.25 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²): 18500

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514642 Client No.: 35254-23b

Volume Filtered (mL):5

Dilution Factor (mL):50 **Grid Openings:8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: MCR-Port Side-Top Of Ducting

Asbestos Structures: 3

Structures < 5 Microns: 3 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 28.8

Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Chrysotile

Amosite

Area Sampled (cm²):100

Location: MCR-Port Side-Wireway Adjacent

Switch Console

Asbestos Structures: 7

Structures < 5 Microns: 4 Structures $\geq 5 \mu m$: 3

Structure Density (s/mm²): 67.3 Structure Concentration (s/cm²): 6480

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018 05/23/2018

Date Analyzed:

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

BC V8T 2W1 Victoria

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514643

Client No.: 35254-24b

Volume Filtered (mL):1 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514644

Client No.: 35254-25b

Volume Filtered (mL):0.5

Dilution Factor (mL):50

Grid Openings:8 Opening Area (mm²):0.013 Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm³):100

Location: Upper D: Starboard Aft Alleyway-

Deckhead Cavity

Asbestos Structures: 6

Structures < 5 Microns: 5 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 57.7

Structure Concentration (s/cm²): 27800

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm²):100

Location: Upper D: Stbd Aft Watertight Door-

DH Cavity

Asbestos Structures: 22

Structures < 5 Microns: 16

Structures ≥ 5 µm: 6

Structure Density (s/mm²): 212 Structure Concentration (s/cm²): 204000

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE

Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054

t. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514645

Client No.: 35254-26b

Volume Filtered (mL):0.25 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):18500

Area Sampled (cm²): 100

Location: Upper D: Aft Oilers Cabin-Deckhead

Cavity

Asbestos Structures: 2

Structures < 5 Microns: 2

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 19.2

Structure Concentration (s/cm²): <u>37000</u> Asbestos Type(s):

Chrysotile

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514646

Client No.:35254-27b

Volume Filtered (mL): 1 Dilution Factor (mL): 50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630 Micrograph Number:

EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Poop D: (P-2) Logistics Office-

Deckhead Cavity

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62

Structure Concentration (s/cm²): <4630

Asbestos Type(s):
None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:
Date Analyzed:

5/18/2018

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

That the for

Frank E. Ehrenfeld, III Laboratory Director

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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: **CCGS Bartlett-General Hazmat Consulting**

Filter Type:MCE

Filter Size (mm²):962

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514647 Area Sampled (cm²):100

Client No.: 35254-28b Location: N. Bridge D: (N-5) Cadet Cabin-

Deckhead Cavity

None Detected

Pore Size (µm):0.45 Asbestos Structures: None Detected Non-Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤9.62

Structure Concentration (s/cm²): <9250 Asbestos Type(s):

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Sensitivity (s/mm²):9.62

Volume Filtered (mL):0.5

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

Detection Limit (s/cm²):9250

Dilution Factor (mL):50 **Grid Openings:8**

Lab No.:6514648

Client No.: 35254-29b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: N. Bridge D: Bridge-Deckhead Cavity

Asbestos Structures: 7

Structures < 5 Microns: 6 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 67.3

Structure Concentration (s/cm²): 16200

Page 9 of 12

Asbestos Type(s):

Chrysotile Actinolite

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



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Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514649

Client No.: 35254-30b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Area Sampled (cm²):50

Location: M.E.R.-Aft Port (Metal Plate Beneath

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤9.62

Structure Concentration (s/cm²): <4630

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514650

Client No.:35254-31b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Gym-Top Of Electrical Cabinet

Asbestos Structures: 9

Structures < 5 Microns: 9 Structures ≥ 5 µm: None Detected

Structure Density (s/mm²): 86.5 Structure Concentration (s/cm²): 83300

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the P	reface of this	report for	further inform	ation regarding	g your analysis

Date Received:

5/18/2018 05/23/2018

Date Analyzed:

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514651 Client No.:35254-31

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):925

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Additional Sample Received

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 9.62 Structure Concentration (s/cm²): 925

Asbestos Type(s):

Actinolite

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm):0.45
Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

The the

Frank E. Ehrenfeld, III Laboratory Director

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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Dated: 5/28/2018 4:18:31

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.: 564104 - Lead Paint

Project: CCGS Bartlett - General Hazmat Consulting

Project No.:

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6514792

Client No.: 35254-10b

Description: Location:

Red Paint On Metal

Auxiliary Machine Space Watertight Door

Result (% by Weight): <0.0062

Result (ppm): <62

Comments:

Lab No.: Client No.: 35254-11b

6514793

Location:

Description: White Paint On Metal

Main Engine Rm Aft Bulkhead

Result (% by Weight): 0.96 9600

Result (ppm): Comments:

Lab No.: 6514794 Client No.: 35254-12b

Location:

Description: Black Paint On Metal

Port Windlass

Result (% by Weight): <0.0067

Result (ppm):

Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/21/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:37

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.: 5641

564104 - Lead Paint

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Paint

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.

Dated: 5/28/2018 4:18:37

Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018

Client Job or PO#: NEED

Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Ashestos	8	Other Materials	8	Comments
35254-1b	Port Windlass	May-17-2018	ę,	Brake Band	Brown	8	100 None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	£	Brake Band	Brown	901	100 None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Audiliary Machine Space (Fire Station 19)	May-17-2018	æ	Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver	Pipe Wrap - White/Silver	ß	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	8	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	ď	Pipe Insulation - Textile Pipe Insulation - over Fibreglass	Pipe Insulation - Yellow	SS	None Detected	٥	Glass	100	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	ЭD	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	Qζ	Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver	Pipe Wrap - White/Silver	25	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	OC	Pipe Insulation - Textile Pipe Insulation - over Fibreglass	Pipe Insulation - Yellow	20	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space May-17-2018 (Fire Station 18)	May-17-2018	ar	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



LAB# 202314

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Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	8	Other Materials	%	Comments
35254-7b	Auxillary Machine Space May-17-2018 JD (Fire Station 18)	May-17-2018		Teal Gasket	Teal	100	100 None Detected	0	Non-Fibrous (70%) 0 Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire May-17-2018 Station 16)	May-17-2018		Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver	Pipe Wrap - White/Silver	50	50 None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire May-17-2018 3D Station 16)	May-17-2018		Pipe Insulation - Textile Pipe Insulation - over Fibreglass	Pipe Insulation - Yellow	20	50 None Detected	0	0 Glass	100	
35254-9b	Main Engine Room (Fire May-17-2018 Station 16)	May-17-2018	30	Black Gasket	Black	100	100 None Detected	0	O Cellulose (15%) Non-Fibrous (85%)	100	



LAB# 202314

7/2

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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529001 Client No.: 35254-47b Location: Gym-Top Of Electrical Cabinet

Concentration (s/cm²): 1230

Area (cm2): 100

Density (s/mm²): 38.5

Asbestos Type(s): Chrysotile

Lab No.:6529002 Client No.: 35254-48b Location: Gym-Top Of Light

Concentration (s/cm²): 2780

Area (cm2): 100

Density (s/mm²): 115

Asbestos Type(s): Chrysotile

Lab No.:6529003 Client No.: 35254-49b Location: Winch Room-Top Of Aft Heater

Area (cm²): 100 Density (s/mm²): 106 Concentration (s/cm²): 25400 Asbestos Type(s): Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Frank E. Ehrenfeld, III Laboratory Director

Signature: Analyst:

Dated: 6/11/2018 10:21:27

Page 1 of 5

Approved By:



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			CEI	RTIFICATE OF AN	NALYSIS		
Client: North V	Vest Env	vironmental (Group Ltd.		Report Date	te: 6	5/8/2018
201 - 4	5 Gorge	e Road East			Report No.		665543 - TEM Dust
Victoria	, DC	V8T 2W1			Project:		Wipe CCGS Bartlett-General Hazmat Consulting
V ICIOI I	, BC	VO1 2 W 1			Project No.		35254
Client: NOR76	5				110,0001110.		3251
			TEM WIPE SA	AMPLE ANAI	LYSIS SU	UMI	MARY
Lab No.:6529004			Location: Winch	Poom-Ton Of Sthd	Λ Ω Shelf C	Once	entration (s/cm²): 12700
Client No.:35254-	50b	~~~~~~	Area (cm ²): 100 Density (s/mm ²):	-			tos Type(s): Chrysotilė
Lab No.:6529005			Location: Boson S	Stores-Top Of Electr	rical Box C	Conce	entration (s/cm²): <2310
Client No.:35254-	51b		Area (cm²): 100 Density (s/mm²):	-			tos Type(s): None Detected
Lab No.:6529006			Location: Boson S	Stores-Top Of Unuse	ed Cable C	ี การ ก	entration (s/cm²): 2310
Client No.: 35254-	52b		Tray	otores rep or chase			tos Type(s): Chrysotile
			Area (cm ²): 100 Density (s/mm ²):	9.62			
T 1 N					1.10	~	
Lab No.:6529007 Client No.:35254-	53b		Area (cm²): 100	Hold-Forward Port S			entration (s/cm²): <1850 tos Type(s): None Detected
			Density (s/mm²):	<76.9			
Lab No.:6529008			Location: Cargo H	Hold-Forward Stbd (Cable C	Conce	entration (s/cm²): 3700
Client No.:35254-	54b		Shield Plate		A	Asbes	tos Type(s): Chrysotile
			Area (cm ²): 100 Density (s/mm ²):	38.5		, , , , , , , , , , , , , , , , , , ,	
Lab No.:6529009			Lagation: Cargo L	Jold-Aft Port Vellov	y Lockout C	Conce	entration (s/cm²): 9250
Client No.:35254-	55b		Box	iola-Ait i oit i chov			tos Type(s): Chrysotile
			Area (cm²): 100	20 5			
			Density (s/mm²):	38.7 			
Lab No.: 6529010		Location: Cargo Hold-Aft Stbd Electrical Box			x Concentration (s/cm²): <925		
Client No.: 35254-	56b		Area (cm²): 100	~10.2	A	Asbes	tos Type(s): None Detected
			Density (s/mm ²):	<19.2			
Please refer to the	Preface	e of this rep	ort for further infor	mation regarding y	our analysis	s.	
Date Received:	6/8/2	2018			Approved	By:	Fre Enerfel
Date Analyzed:	06/0	8/2018				•	Frank E. Ehrenfeld, III
Signature:							Laboratory Director

Dated: 6/11/2018 10:21:27

Analyst:

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Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CC

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529011 Client No.:35254-57b Location: Field Blank Area (cm²): Blank Density (s/mm²): <19.2

Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature:

Analyst:

_

Approved By:

Fre Frankl

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/11/2018 10:21:27

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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 56554

565543 - TEM Dust Wipe

Project: C

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique, iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/11/2018 10:21:27



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9000 Commerce Parkway Suite B

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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust Wipe

CCGS Bartlett-General Hazmat Consulting Project:

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



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Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514632

Location: Bridge-Fire Panel Console (Mid Port Concentration (s/cm²): 178000

Client No.:35254-13b Console)

Asbestos Type(s): Chrysotile Amosite

Area (cm²): 100 Density (s/mm²): 1850

Lab No.:6514633 Client No.: 35254-14b Location: A.M.S. (Wireway Above Sewage

Concentration (s/cm²): 222000 Asbestos Type(s): Chrysotile

Tank)

Area (cm2): 50

Density (s/mm²): 231

Lab No.:6514634 Client No.: 35254-15b Location: M.E.R. (Wireway Adjacent To Escape Concentration (s/cm²): 111000

Asbestos Type(s): Chrysotile Tremolite Amosite

Hatch) Area (cm²): 100

Density (s/mm²): 57.7

Density (s/mm²): 135

Lab No.:6514635 Client No.:35254-16b **Location:** Bridge-(Forward Port Console)

Concentration (s/cm²): 64800

Area (cm²): 100

Asbestos Type(s): Amosite Chrysotile

Lab No.:6514636 Client No.: 35254-17b

Location: Bridge-(Forward Middle Console)

Area (cm²): 100

Density (s/mm²): 231

Concentration (s/cm²): 55500

Asbestos Type(s): Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

Signature:

Analyst:

05/23/2018

Approved By:

Frank E. Ehrenfeld, III **Laboratory Director**

Dated: 5/28/2018 4:18:29

Page 1 of 6



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514637 Client No.: 35254-18b

Lab No.:6514638

Client No.: 35254-19b

Location: Bridge-(Forward Starboard Console)

Concentration (s/cm²): <9250 Asbestos Type(s): None Detected

Area (cm²): 100

Density (s/mm²): <9.62

Location: Bridge-(Mid Starboard Console) Concentration (s/cm²): 27800 Asbestos Type(s): Amosite Chrysotile

Area (cm2): 100 Density (s/mm²): 115

Concentration (s/cm²): 17000 Lab No.:6514639 Location: MCR-Console

Client No.: 35254-20b Area (cm²): 100 Asbestos Type(s): Chrysotile Amosite

Density (s/mm²): 106

Lab No.:6514640 Location: MCR-Top Of Console Concentration (s/cm²): 16200 Client No.:35254-21b

Area (cm²): 100 Asbestos Type(s): Chrysotile

Density (s/mm²): 67.3

Lab No.:6514641 Location: MCR-Port Side-Top Of Ducting

Client No.: 35254-22b Area (cm²): 100

Density (s/mm²): 28.8

Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile Amosite

Lab No.:6514642 Client No.: 35254-23b

Location: MCR-Port Side-Wireway Adjacent

Switch Console Area (cm²): 100 Concentration (s/cm²): 6480 Asbestos Type(s): Chrysotile

Density (s/mm²): 67.3

Lab No.:6514643 Client No.:35254-24b Location: Upper D: Starboard Aft Alleyway-

Deckhead Cavity Area (cm2): 100 Density (s/mm²): 57.7 Concentration (s/cm²): 27800

Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

Signature:

Analyst:

05/23/2018

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 5/28/2018 4:18:29

Page 2 of 6

ASBESTOS TESTING LABORATORIES

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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Project: CCGS Bartlett-General Hazmat Consulting

Concentration (s/cm²): 204000

Asbestos Type(s): Chrysotile

Concentration (s/cm²): <4630

Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Asbestos Type(s): None Detected

Asbestos Type(s): Chrysotile Amosite

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514644 Client No.: 35254-25b Location: Upper D: Stbd Aft Watertight Door-

DH Cavity

Area (cm2): 100

Density (s/mm²): 212

Lab No.:6514645 Client No.: 35254-26b Location: Upper D: Aft Oilers Cabin-Deckhead Concentration (s/cm²): 37000

Cavity

Area (cm2): 100 **Density (s/mm²): 19.2**

Lab No.:6514646 Client No.: 35254-27b Location: Poop D: (P-2) Logistics Office-

Deckhead Cavity Area (cm²): 100

Density (s/mm²): <9.62

Lab No.:6514647 Client No.:35254-28b Location: N. Bridge D: (N-5) Cadet Cabin-

Deckhead Cavity Area (cm2): 100

Density (s/mm²): <9.62

Lab No.:6514648 Client No.: 35254-29b

Location: N. Bridge D: Bridge-Deckhead Cavity Concentration (s/cm²): 16200

Area (cm2): 100

Density (s/mm²): 67.3

Asbestos Type(s): Chrysotile Actinolite

Lab No.:6514649 Client No.: 35254-30b Location: M.E.R.-Aft Port (Metal Plate Beneath Concentration (s/cm²): <4630

Wireway) Area (cm2): 50

Density (s/mm²): <9.62

Asbestos Type(s): None Detected

Lab No.:6514650 Client No.: 35254-31b Location: Gym-Top Of Electrical Cabinet

Area (cm2): 100

Density (s/mm²): 86.5

Concentration (s/cm²): 83300

Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

Signature:

05/23/2018

Analyst:

Approved By:

Laboratory Director

Dated: 5/28/2018 4:18:29

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514651 Client No.:35254-31 Location: Additional Sample Received

Area (cm²): 100 Density (s/mm²): 9.62 Concentration (s/cm²): 925 Asbestos Type(s): Actinolite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

Dated: 5/28/2018 4:18:29 __

05/23/2018

Signature:

Analyst:

_

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Approved By:

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust Wipe

Project:

Project No.:

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

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iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

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iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

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(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40

Dated: 5/28/2018 4:18:29



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de la Loi sur l'acc 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

BC V8T 2W1

Report Date:

5/23/2018

201 - 415 Gorge Road East

Report No.:

564091 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7) Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8) Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

Victoria

Client: NOR765

(12) Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18) Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

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North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria, BC V8T 2W1

e-mail: northwest@nwest.bc.ca

Tel: (250) 384-9695 Fax: (250) 384-9865

Analysed in accordance with NIOSH 7400 fibre counting method

Air Sample Report

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Client Job or PO#: F1782-180965 **Date:** June 11, 2018

Project number: 35254

Overloaded with Welding Dust Overloaded with Welding Overloaded with Welding Dust Comment Dust 007 Χ × ΑŅ v ٧ ٧ ٧ Density Concen. v/vv (fib/mm2) (fib/mt.) Χ× ۷ ۸ Ϋ́ ≷ ≷ ≥ ≥ > N/A Α <0.01 Ν <0.01 <0.01 <0.01 <0,01 <0.01 <0.01 N/A 5.73 3.18 N/A 2.55 8.92 5.10 N/A 0.00 7,01 Volume (L) 1098.62 1950 1956,96 818.26 949 130 0 1082.32 1953,25 1982.08 100 100 100 100 100 100 100 100 100 901 # Fields # Fibres 7.0 2.0 5,5 4.5 2.5 0.0 ರ 4.0 5 占 Time (Mins) 604 608 337 900 292 332 601 各 251 0 Time Off 13:33 18:20 18:29 13:34 18:12 18:36 18:42 00:00 18:07 14:31 08:16 Time On 00:00 07:56 08:07 08:11 08:21 13:44 14:31 08:02 13:51 Avg. Flow Rate (ipm) 3.26 3,25 3.25 3.24 3,26 3.25 3.25 3.26 3.26 0 Analyst Ж Ж Ж 쫎 器 Ж BR 딺 쫎 8 Type* AMB AMB AMB AMB AMB AMB AMB AMB AMB 8 35254-10a | May-31-2018 | Jun-01-2018 | (QC) Field Blank 35254-3a May-31-2018 Jun-01-2018 Cabin 35254-4a | May-31-2018 | Jun-01-2018 | (AMB) Lounge Area May-31-2018 Jun-01-2018 (AMB) MCR 2 (AMB) MCR 1 (AMB) AMS 1 35254-5a | May-31-2018 | Jun-01-2018 | (AMB) Bridge Jun-01-2018 (AMB) AMS 3 (AMB) AMS 2 35254-6a | May-31-2018 | Jun-01-2018 | (AMB) Gym May-31-2018 Jun-01-2018 May-31-2018 Jun-01-2018 May-31-2018 Jun-01-2018 Anahysed Date May-31-2018 Date Collected Sample No 35254-7a 35254-9a 35254-1a 35254-2a 35254-8a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



1/4

LAB# 202314

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Comment	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										/ Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
007	٧	٧		٧		٧	٧	٧		٧	٧		٧		٧	v
v/v	3	>		>		>	>	>		>	>		>		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	0.00	8.92	7.64	12.10	3.18	9.55	5.10	00.00	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962,4	133.11	0	942,48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	0'9	6.5	2.5	7.5	4.0	0'0	2.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time Off	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	08:06	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2.61	0	2.92	0	2.92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Type* Analyst	Qſ	Ωſ	Ωſ	BR	BR	BR	BR	BR	BR	QΓ	Οť	JD	ar	Ωſ	Ωſ	DC
Туре*	သဝ	AMB	ъð	AMB	გ,	AMB	AC	AC	эð	AMB	သဝ	ρġ	AMB	ည	AMB	AC
Area	Jun-06-2018 (OCC) Occupational	(AMB) Cargo Hold Adj. Gym Entrance	_	(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational	(QC) Field Blankl	(AMB) Poop Deck Port Alleyway		(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08÷2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	35254-11a Jun-05-2018	35254-12a Jun-05-2018	35254-13a Jun-05-2018	35254-14a Jun-06-2018	35254-15a Jun-06-2018	35254-16a Jun-06-2018	Jun-06-2018	Jun-06-2018	35254-19a Jun-06-2018	35254-20a Jun-07-2018	35254-21a Jun-07-2018	35254-22a Jun-07-2018	35254-23a Jun-08-2018	35254-24a Jun-08-2018	35254-25a Jun-09-2018	35254-26a Jun-09-2018
Sample	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

001010

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Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (Ipm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	% / x	700	Comment
018	35254-27a Jun-10-2018 Jun-11-2018 Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	O.	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	3	V	
1018	Jun-11-2018	35254-28a Jun-10-2018 Jun-11-2018 Alleyway Adj. Two Oilers	AMB	QC	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	>	V	
2018	Jun-11-2018	35254-29a Jun-10-2018 Jun-11-2018 (AC) Poop Deck - 3rd Officer Cabin	AC	OC	15,46	16:13	19:02	169	3,0	100	2612.74	3,82	<0.01	3	v	
2018	Jun-11-2018	35254-30a Jun-10-2018 Jun-11-2018 (AC) Poop Deck - 3rd Officer Cabin	AC	OC	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	3	v	
2018	Jun-11-2018	35254-31a Jun-10-2018 Jun-11-2018 (AC) Poop Deck - Sr. Eng. Cabin	AC	ЭD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	>	V	
2018	Jun-11-2018	35254-32a Jun-10-2018 Jun-11-2018 (AC) Poop Deck - Sr. Eng. Cabin	AC	Ωſ	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	>	×	
2018	Jun-11-2018	35254-33a Jun-10-2018 Jun-11-2018 (AC) Poop Deck - Aft Oil Cabin	AC	ac	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	>	v	
2018	35254-34a Jun-10-2018 Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	Ωſ	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	>	V	
-2018	Jun-11-2018	35254-35a Jun-10-2018 Jun-11-2018 (QC) Field Blank	AC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
-2018	35254-36a Jun-10-2018 Jun-11-2018	(QC) Field Blank	ဘံ	Ωť	0	00:00	00:00	0	0.0	100	0	00.00	<0.01			

PAT PROGRAMS
AINA PROFICIENCY ANALYTICAL TESTING PROGRAMS
LAB# 202314

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

3/4

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC – occupational: sample collected on a worker within the work area, Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

Z Z As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

PAT PROGRAMS.

AIR PROFICERCY ARACTICAL TESTING PROGRAMS

LAB# 202314

001012



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CC

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529001 Client No.:35254-47b

Volume Filtered (mL): 15
Dilution Factor (mL): 50
Grid Openings: 4
Opening Area (mm²): 0.01

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 617 Area Sampled (cm²):100

Location: Gym-Top Of Electrical Cabinet

Asbestos Structures: 2

Structures < 5 Microns: 2
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 1230

Asbestos Type(s): Chrysotile Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45 Non-Asbestos Structures: 2

Structure Density (s/mm²):38.5 Structure Concentration (s/cm²):1230

Non-Asbestos Type(s):

SiMg - Talc SiAl - Other Fiber

Micrograph Number: EDXA Spectrum ID:

Lab No.:6529002 Client No.:35254-48b

Volume Filtered (mL):20 Dilution Factor (mL):50 Grid Openings:4 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):463

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100 Location: Gym-Top Of Light

Asbestos Structures: 6

Structures < 5 Microns: 6
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 2780

Asbestos Type(s):

Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 3

Structure Density (s/mm²):57.7 Structure Concentration (s/cm²):1390

Non-Asbestos Type(s): SiMg - Talc SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature:

Analyst:

Dated: 6/11/2018 10:21:27

Approved By:

Stal the fol

Frank E. Ehrenfeld, III Laboratory Director

Page 1 of 7



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de la Loi sur l'accès à l'intermation Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.:

565543 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529003

Client No.: 35254-49b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Winch Room-Top Of Aft Heater

Asbestos Structures: 11

Structures < 5 Microns: 8 Structures ≥ 5 µm: 3

Structure Density (s/mm²): 106

Structure Concentration (s/cm²): 25400

Asbestos Type(s):

Chrysotile

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45 Non-Asbestos Structures: 2

Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²):4630

Non-Asbestos Type(s): SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature:

Analyst:

Dated: 6/11/2018 10:21:28

Approved By:



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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting Project:

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529004 Client No.: 35254-50b

Volume Filtered (mL):4 Dilution Factor (mL):50

Grid Openings:8 Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):1160

Area Sampled (cm²):100

Location: Winch Room-Top Of Stbd Aft Shelf

Asbestos Structures: 11

Structures < 5 Microns: 11 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 106 Structure Concentration (s/cm²): 12700

Asbestos Type(s): Chrysotile

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<1160 Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6529005 Client No.: 35254-51b

Volume Filtered (mL):2 Dilution Factor (mL):50 **Grid Openings: 8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Boson Stores-Top Of Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <2310

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface	of this rep	port for furth	er information	regarding you	r analysis.

Date Received:

Date Analyzed:

6/8/2018 06/08/2018

Signature: Analyst:

Dated: 6/11/2018 10:21:28

Approved By:



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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.:

565543 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529006

Client No.: 35254-52b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):2310

Area Sampled (cm²):100

Location: Boson Stores-Top Of Unused Cable

Tray

Asbestos Structures: 1

Structures < 5 Microns: 1

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 9.62 Structure Concentration (s/cm²): 2310

Asbestos Type(s): Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6529007 Client No.: 35254-53b

Volume Filtered (mL):20 Dilution Factor (mL):50

Grid Openings: 1

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0130 Sensitivity (s/mm²): 76.9 Detection Limit (s/cm²): 1850

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Cargo Hold-Forward Port Shelf

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <76.9 Structure Concentration (s/cm²): <1850

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<76.9 Structure Concentration (s/cm²):<1850

Non-Asbestos Type(s):

None Detected

P	lease	reter	to 1	he !	Pretace	of this	report	tor	further	ıntorma	tion i	regaro	ling yo	our ana	lysis.
_															

Date Received:

Signature: Analyst:

6/8/2018

Date Analyzed:

06/08/2018

Dated: 6/11/2018 10:21:28

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 4 of 7



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCG

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529008

Client No.: 35254-54b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings: 8 Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62 Detection Limit (s/cm²): 925 Area Sampled (cm²): 100

Location: Cargo Hold-Forward Stbd Cable

Shield Plate

Asbestos Structures: 4

Structures < 5 Microns: 4
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 38.5
Structure Concentration (s/cm²): 3700

Asbestos Type(s): Chrysotile

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<925

Filter Type: MCE

Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Type(s):

Non-Asbestos Structures: None Detected

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6529009 Client No.:35254-55b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Cargo Hold-Aft Port Yellow Lockout

Box

Asbestos Structures: 4

Structures < 5 Microns: 3 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 38.5 Structure Concentration (s/cm²): 9250

Asbestos Type(s):

Chrysotile

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of	f this report for further	information regard	ing your analysis.
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Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature: Analyst:

Dated: 6/11/2018 10:21:28

Approved By:

Erank E Chronfold III



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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CC

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529010

Client No.: 35254-56b

Volume Filtered (mL): 10 Dilution Factor (mL): 50

Dilution Factor (mL):50 Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):925

Area Sampled (cm²):100

Location: Cargo Hold-Aft Stbd Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6529011 Client No.:35254-57b

Volume Filtered (mL): 10 Dilution Factor (mL): 50

Grid Openings:4

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):Blank Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.								
Date Received:	6/8/2018	Approved By:	Frank Tuenful					
Date Analyzed:	06/08/2018		Frank E. Ehrenfeld, III					
Signature:			Laboratory Director					
Analyst:								

Dated: 6/11/2018 10:21:28

Page 6 of 7



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254



s.19(1)

9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.:

565817 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

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Project No.:

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6531787 Client No.: 35254-72b Location: Upper D: Crew Cabin U-36 (Aft Port) Concentration (s/cm²): <925

-TV Shelf

Area (cm2): 100

Asbestos Type(s): None Detected

Density (s/mm²): <19.2

Lab No.:6531788

Location: Upper D: 3rd Engineer Cabin U-27

Concentration (s/cm²): <881 Asbestos Type(s): None Detected

Client No.: 35254-74b

Behind Monitor Area (cm2): 100

Density (s/mm²): <11.0

Lab No.:6531789 Client No.: 35254-76b

Location: Field Blank Area (cm2): 100

Density (s/mm²): <12.8

Concentration (s/cm²): <881 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Date Analyzed:

06/13/2018

Signature:

Analyst:

Dated: 6/13/2018 5:06:41

Approved By:



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de la Loi sur l'a 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.:

565817 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

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Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/13/2018 5:06:41

Page 2 of 3



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565817 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

7402

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13) Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



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de la Loi sur l'ac9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

565817 - TEM Dust Report No.:

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531787 Client No.: 35254-72b

Volume Filtered (mL): 10 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013

Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):925

Area Sampled (cm²):100

Location: Upper D: Crew Cabin U-36 (Aft Port)- Filter Size (mm²): 962

TV Shelf

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Filter Type: MCE Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²): <925

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6531788 Client No.: 35254-74b

Volume Filtered (mL):6 Dilution Factor (mL):50 Grid Openings:7

Opening Area (mm²):0.013 Area Analyzed (mm²): 0.0910 Sensitivity (s/mm²): 11.0 Detection Limit (s/cm²):881

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): 100

Location: Upper D: 3rd Engineer Cabin U-27

Behind Monitor

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <11.0 Structure Concentration (s/cm²): <881

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<11.0 Structure Concentration (s/cm²):<881

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Date Analyzed:

06/13/2018

Signature:

Analyst:

Dated: 6/13/2018 5:06:42

Approved By:



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> Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565817 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6531789 Client No.: 35254-76b

Volume Filtered (mL):7 Dilution Factor (mL):50 **Grid Openings:**6 Opening Area (mm²):0.013

Area Analyzed (mm²):0.0780 Sensitivity (s/mm²): 12.8 Detection Limit (s/cm²):881

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100 Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <12.8 Structure Concentration (s/cm²): <881

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<12.8 Structure Concentration (s/cm²): <881

Non-Asbestos Type(s):

None Detected

Please refer to the	e Preface of this report	for further information	regarding your analysis.
D.4. D	6/12/2019		A A

Date Received:

6/12/2018

Date Analyzed:

06/13/2018

Signature:

Analyst:

Dated: 6/13/2018 5:06:42

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 2 of 3



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Dated: 6/13/2018 5:06:42

Report Date: 6/13/2018

Report No.: 565817 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Page 3 of 3



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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.:

566181 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6536374 Client No.: 35254-83b

Volume Filtered (mL): 10 Dilution Factor (mL):50 **Grid Openings:4**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2

Detection Limit (s/cm²): 925

Area Sampled (cm²): 100

Location: Wheelhouse-Fwd Port Window Sill

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤19.2 Structure Concentration (s/cm²): <925

Asbestos Type(s):

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6536375 Client No.: 35254-84b

Volume Filtered (mL):10 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Wheelhouse-Mid Stbd Top Of Console Filter Size (mm²): 962

Asbestos Structures: 1

Structures < 5 Microns: 1

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 925

Asbestos Type(s): Chrysotile

Filter Type:MCE

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature: Analyst:

Dated: 6/19/2018 11:01:41

Approved By:



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BCV8T 2W1

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6536376

Client No.: 35254-85b

Client: NOR765

Volume Filtered (mL):8 Dilution Factor (mL):50

Grid Openings:5 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0650

Sensitivity (s/mm²): 15.4 Detection Limit (s/cm²):925 Area Sampled (cm²): 100

Location: Wheelhouse-Mid Stbd Inside Console Filter Size (mm²): 962

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <15.4 Structure Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Filter Type:MCE

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<15.4

Structure Concentration (s/cm²):<925

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6536377

Client No.: 35254-86b

Volume Filtered (mL):5 Dilution Factor (mL):50 **Grid Openings:8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Wheelhouse-Fwd Stbd Inside Console Filter Size (mm²): 962

Asbestos Structures: 2

Structures < 5 Microns: 1 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 1850

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Pore Size (µm): 0.45

Non-Asbestos Structures: 1

Structure Density (s/mm²):9.62 Structure Concentration (s/cm²):925

Non-Asbestos Type(s): SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018 06/19/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/19/2018 11:01:41

Approved By:



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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

V8T 2W1 Victoria BC

Client: NOR765

Report Date: 6/19/2018

Report No.:

566181 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

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Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536378 Client No.: 35254-87b

Volume Filtered (mL):50 Dilution Factor (mL):50 **Grid Openings:5**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0650 Sensitivity (s/mm²):15.4 Detection Limit (s/cm²): NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): Blank

Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤ 15.4 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<15.4 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

Dated: 6/19/2018 11:01:41

Signature: Analyst:

06/19/2018

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 3 of 4



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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 56

566181 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254



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Rev #2, 6/13/2018

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Project:

CCGS Bartlett-General Hazmat Consulting

565818 - TEM Dust

Project No.: 35254

Report No.:

Report Date: 6/13/2018

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6531790 Client No.: 35254-58b

Client: NOR765

Location: Poop Deck-Supply Officer Cabin-Top Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Of Fridge Area (cm²): 100

Density (s/mm²): <19.2

Concentration (s/cm²): <771

Lab No.:6531791 Client No.: 35254-60b

Shelf

Location: Poop Deck-3rd Officer Cabin-Book

Area (cm2): 100

Density (s/mm²): <19.2

Asbestos Type(s): None Detected

Lab No.:6531792 Client No.: 35254-62b

Location: Poop Deck-Steward Cabin-Window

Sill

Area (cm2): 100

Density (s/mm²): <12.8

Concentration (s/cm²): <881 Asbestos Type(s): None Detected

Lab No.:6531793

Location: Field Blank Area (cm²): 100

Concentration (s/cm²): <617 Asbestos Type(s): None Detected

Client No.: 35254-64b

Density (s/mm²): <19.2

Lab No.:6531794 Location: Upper Deck-Aft Oiler Cabin-Desk Client No.: 35254-66b Area (cm2): 100

Density (s/mm²): 19.2

Concentration (s/cm²): 617

Asbestos Type(s): Chrysotile

Lab No.:6531795

Location: Boat Deck-Chief Engineer Cabin-

Client No.: 35254-68b

Cabinet Under Porthole Area (cm2): 100

Concentration (s/cm²): 1850 Asbestos Type(s): Chrysotile

Lab No.:6531796 Client No.: 35254-70b Location: Field Blank Area (cm²): Blank

Density (s/mm²): <7.69

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Date Analyzed:

06/13/2018

Approved By:

Density (s/mm²): 57.7

Frank E. Ehrenfeld, III Laboratory Director

Signature: Analyst:

Dated: 6/13/2018 4:59:58

Page 1 of 3



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Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.:
Project:

CCGS Bartlett-General Hazmat Consulting

565818 - TEM Dust Wipe

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

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iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

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General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

I'his confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

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Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

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There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763

Dated: 6/13/2018 4:59:58

Page 2 of 3



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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565818 - TEM Dust Wipe

Project: CCGS P

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

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de la Loi sur l'ac9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449 Email: customerservice@iatl.com



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date:

6/13/2018

201 - 415 Gorge Road East Victoria BC V8T 2W1 Report No.:

565818 - TEM Dust

Rev #2, 6/13/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6531790

Area Sampled (cm²):100

Filter Type:MCE Filter Size (mm²):962

Client No.: 35254-58b

Location: Poop Deck-Supply Officer Cabin-Top Of Fridge

Pore Size (µm): 0.45 Non-Asbestos Structures: None Detected

Volume Filtered (mL): 10 Dilution Factor (mL):50

Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Grid Openings:4 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <925

Structure Concentration (s/cm²):<925 Non-Asbestos Type(s):

Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):925

Asbestos Type(s): None Detected

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6531791 Client No.:35254-60b Area Sampled (cm²): 100

Filter Type: MCE Filter Size (mm²):962

Location: Poop Deck-3rd Officer Cabin-Book Shelf

Pore Size (µm):0.45 Non-Asbestos Structures: None Detected

Volume Filtered (mL): 12 Dilution Factor (mL):50 **Grid Openings:4**

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <19.2

Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<771

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):771

Structure Concentration (s/cm²): <771 Asbestos Type(s):

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Date Analyzed:

06/13/2018

Signature:

Analyst:

Dated: 6/13/2018 4:59:58

Approved By:



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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565818 - TEM Dust

Rev #2, 6/13/2018

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.:

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6531792

Client No.: 35254-62b

Volume Filtered (mL):7 Dilution Factor (mL):50

Grid Openings:6

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0780 Sensitivity (s/mm²): 12.8

Detection Limit (s/cm²):881

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6531793 Client No.: 35254-64b

Volume Filtered (mL):15 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):617

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Poop Deck-Steward Cabin-Window

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <12.8

Asbestos Type(s):

Structure Concentration (s/cm²): <881

None Detected

Area Sampled (cm²):100 Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <617

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<12.8 Structure Concentration (s/cm²):<881

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018 06/13/2018

Date Analyzed:

Signature:

Analyst:

Dated: 6/13/2018 4:59:58

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 2 of 5



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Telephone: 856-231-9449 Email: customerservice@iatl.com



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.:

565818 - TEM Dust

Rev #2, 6/13/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6531794

Client No.:35254-66b

Volume Filtered (mL):15 Dilution Factor (mL):50

Grid Openings: 4 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520

Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):617

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6531795 Client No.: 35254-68b

Volume Filtered (mL):15 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):617

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Upper Deck-Aft Oiler Cabin-Desk

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 617

Asbestos Type(s): Chrysotile

Area Sampled (cm²):100

Location: Boat Deck-Chief Engineer Cabin-

Cabinet Under Porthole **Asbestos Structures:** 3

Structures < 5 Microns: 3

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 57.7 Structure Concentration (s/cm²): 1850

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Date Analyzed:

06/13/2018

Signature:

Analyst:

Dated: 6/13/2018 4:59:58

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



s.19(1)

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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

V8T 2W1 Victoria BC

Client: NOR765

Report Date: 6/13/2018

Report No.:

565818 - TEM Dust

Rev #2, 6/13/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531796

Client No.: 35254-70b

Volume Filtered (mL):7 Dilution Factor (mL):50 Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²): NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2):Blank Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²): NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Date Analyzed:

06/13/2018

Signature:

Analyst:

Dated: 6/13/2018 4:59:59

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



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de la Loi sur l'a 9000 Commerce Parkway Suite P

Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565818 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254



Post Bridge Character Released Under the Access to de la Loi eur Postance Control de la Loi e

06/18/2018

s.19(1)

Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6536374 Client No.: 35254-83b Location: Wheelhouse-Fwd Port Window Sill

Area (cm2): 100

Density (s/mm²): <19.2

Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Lab No.:6536375 Client No.: 35254-84b Location: Wheelhouse-Mid Stbd Top Of

Console

Area (cm2): 100 Density (s/mm²): 19.2 Concentration (s/cm²): 925

Asbestos Type(s): Chrysotile

Lab No.:6536376 Client No.: 35254-85b Location: Wheelhouse-Mid Stbd Inside Console Concentration (s/cm²): <925

Area (cm²): 100

Density (s/mm²): <15.4

Asbestos Type(s): None Detected

Lab No.:6536377 Client No.: 35254-86b

Location: Wheelhouse-Fwd Stbd Inside Console Concentration (s/cm²): 1850

Area (cm²): 100

Density (s/mm²): 19.2

Asbestos Type(s): Chrysotile

Lab No.:6536378 Client No.: 35254-87b

Location: Field Blank Area (cm²): Blank

Density (s/mm²): <15.4

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature:

Analyst:

Dated: 6/19/2018 11:01:40

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 1 of 3



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> Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 50

566181 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 3

35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/19/2018 11:01:40

Page 2 of 3



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de la Loi sur l'acc9000 Commerce Parkway Suite B

Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

ALL JUNE ALR SAMPLES



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018

Client Job or PO#: F1782-180965

Project number: 35254

i i	bg Jing	ed ling						ed ling		
Comment	Overloaded with Welding Dust	Overloaded with Welding Dust					,	Overloaded with Welding Dust		
001	N/A	N/A	v	٧	٧	v	v	N/A	٧	
v/vv	N/A	N/A	≥	>	Χ	>	≥	N/A	>	
Concen. (fib/mL)	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	N/A	N/A	2.55	7.01	5.73	8.92	5.10	N/A	3.18	00.0
Volume (L)	1098.62	1082.32	1950	1953.25	1956.96	1982.08	949	130	818.26	0
# Fleids	100	100	100	100	100	100	100	100	100	100
# Fibres	10	JO.	2.0	5.5	4.5	0.7	4.0	10	2.5	0.0
Time (Mins)	337	332	909	601	604	809	267	40	251	0
Time Off	13:33	13:34	18:07	18:12	18:20	18:29	18:36	14:31	18:42	00:00
On Car	07:56	08:02	08:07	08:11	08:16	08:21	13:44	13:51	14:31	00:00
Avg. Flow (Ipm)	3.26	3,26	3.25	3.25	3.24	3.26	3.25	3.25	3.26	0
Analyst	BR	**	BR	BR	BR	BR	BR	W.	BR	æ
Type*	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	8
Aros	(AMB) MCR 1	(AMB) AMS 1	(AMB) Aft Oilers Cabin	(AMB) Lounge	(AMB) Bridge	(AMB) Gym	(AMB) MCR 2	(AMB) AMS 2	(AMB) AMS 3	35254-10a May-31-2018 Jun-01-2018 (QC) Field Blank
Date Analysed	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	May-31-2018 Jun-01-2018	Jun-01-2018
Date	35254-1a May-31-2018 Jun-01-2018 (AMB) MCR 1	May-31-2018 Jun-01-2018 (AMB) AMS 1	35254-3a May-31-2018 Jun-01-2018	35254-4a May-31-2018 Jun-01-2018 (AMB) Lounge	35254-5a May-31-2018 Jun-01-2018 (AMB) Bridge	May-31-2018 Jun-01-2018	May-31-2018 Jun-01-2018	35254-8a May-31-2018 Jun-01-2018 (AMB) AMS 2	May-31-2018	May-31-2018
Sample	35254-1a	35254-2a	35254-3a	35254-4a	35254-5a	35254-6a	35254-7a	35254-8a	35254-98	35254-10a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this



PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Comment	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										/ Tyvek, PAPR / Vacuuming, Brushing, and Wiping					
L00	٧	٧		٧		٧	٧	٧		٧	٧		>		>	>
v/vv LOQ	%	>		>		^	^	^		>	>		>		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1,27	16.56	00'0	8.92	7.64	12.10	3.18	9.55	5.10	0.00	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305.6
* Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
* Fibres	4.5	12.5	1.0	13.0	0.0	7.0	6.0	9.5	2.5	7.5	4.0	0.0	5.0	1.5	5.5	12.C
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time Off	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2.61	0	2.92	0	2.92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Analyst	O.	Ωſ	Ωſ	Ж	BR	BR	BR	8	BR	OF.	Œ	Ωſ	OC.	JD	Ð.	OC
Type*	2200	AMB	ည	AMB	ည	AMB	AC	AC.	χ,	AMB	2200	ည	AMB	S S	AMB	AC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance	(QC) Field Blank	(AMB) Cargo Hold Adj. Gym		(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	35254-21a Jun-07-2018 Jun-08-2018 (OCC) Occupational (AMS)	(QC) Field Blanki	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed		Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-06-2018 Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date	Jun-05-2018 Jun-06-2018	Jun-05-2018 Jun-06-2018	Jun-05-2018	Jun-06-2018		Jun-06-2018 Jun-07-2018	Jun-06-2018 Jun-07-2018	35254-18a Jun-06-2018 Jun-07-2018	35254-19a Jun-06-2018 Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	Jun-08-2018	Jun-09-2018	35254-26a Jun-09-2018 Jun-10-2018
Sample	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a



LAB# 202314

								· · · · · ·	-										 1
Comment																		/ Top Level / PAPR	/ 4th Level / PAPR
ဝို	٧	٧	٧	v	٧	٧	٧	·			v		v	v		v	٧	٧	v
A/A	}	}	≷	≯	>	>	>	>			>		>	>		>	>	>	8
Concen. (fib/ml.)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0,01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22,93	22.29	0.00	0.00	8.28	0.00	21.66	13.38	0.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512.95	2497.72	0	0	545.49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
# Flekds	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	209	0	153	153	0	149	143	32	28
Time Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
Time On	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (Ipm)	2.1	2.35	15.46	15.23	15.46	15.23	15.23	15.23	0	0	2.61	0	16	16	0	15.25	15.25	2.6	2.6
Type* Analyst	Ωſ	Ωſ	ЭD	QΩ	Ωſ	ЭD	Ωſ	JD	αr	ar	Ωſ	JD	Ωſ	JD	JD	Ωſ	Or.	8	ЭC
Type*	AMB	AMB	AC	AC	AC	AC	AC	AC	သင	ည	AMB	ος	AC	AC	ЭĊ	AC	AC	25	220
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	oop Deck - icer Cabin	(AC) Poop Deck - 3rd Officer Cabin	ç.	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	(OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Date Collected	35254-27a Jun-10-2018	35254-28a Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	35254-34a Jun-10-2018	Jun-10-2018	35254-36a Jun-10-2018	Jun-12-2018	Jun-12-2018	35254-39a Jun-12-2018 Jun-12-2018	35254-40a Jun-12-2018	35254-41a Jun-12-2018	Jun-15-2018	Jun-15-2018	35254-44a Jun-15-2018	Jun-15-2018
Sample No	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a



LAB# 202314

3/2

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Comment																	
8	٧		٧	V		٧	٧	٧	٧			٧		٧	٧		
A/A	≥		>	3		>	>	>	>			≯		>	≥		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	1.91	0.00	7.01	5.10	1.27	13.38	7.01	27.39	22.93	1.27	3.18	00.0	00'0	0.64	1.27	1.27	00'0
Volume (L)	458.4	0	2168	2168	0	2354.48	2354.48	2354.48	2354.48	0	0	869.75	0	2555.12	2648.6	0	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
#Pbres	1.5	0.0	5.5	4.0	1.0	10.5	5.5	21.5	18.0	1.0	2.5	0.0	0.0	0.5	1.0	1.0	0.0
Time (Mins)	191	0	271	271	0	152	152	152	152	0	0	355	0	164	170	0	0
를 <mark>문</mark>	13:56	00:00	15:34	15:34	00:00	11:28	11:28	11:41	11:41	00:00	00:00	14:51	00:00	12:57	12:59	00:00	00:00
Time On	10:45	00:00	11:03	11:03	00:00	95:80	95:80	60:60	60:60	00:00	00:00	95:80	00:00	10:13	10:09	00:00	00:00
Avg. Flow Rate (Ipm)	2.4	0	8	8	0	15,49	15.49	15.49	15.49	0	0	2,45	0	15.58	15.58	0	0
Analyst	Of	OC.	OC	OC	JD.	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR.
Type*	АМВ	ЭÒ	AC	AC	ъò	AC	AC	AC	AC	ъò	20	АМВ	oc oc	AC	AC)	ЭÒ
Area	(AMB) MER Below Stack	(QC) Field Blank	(AC) Wheelhouse	(AC) Wheelhouse	(QC) Field Blank	(AC) Cargo Hold 1	(AC) Cargo Hold 1	(AC) Winch Room 1	(AC) Winch Room 2	(QC) Field Blank 1	(QC) Field Blank 2	(AMB) Mer Below Stack	(QC) Field Blank	(AC) Stack	(AC) Stack	(QC) Field Blank	35254-62a Jun-21-2018 Jun-21-2018 (QC) Field Blank
Date Analysed	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	35254-50a Jun-16-2018 Jun-17-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018	Jun-21-2018	Jun-21-2018	Jun-21-2018
Date Collected	35254-46a Jun-16-2018	35254-47a Jun-16-2018	35254-48a Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-17-2018	35254-52a Jun-17-2018	35254-53a Jun-17-2018	35254-54a Jun-17-2018	35254-55a Jun-17-2018	Jun-17-2018	35254-57a Jun-19-2018	Jun-19-2018	35254-59a Jun-21-2018	35254-60a Jun-21-2018	35254-61a Jun-21-2018 Jun-21-2018	Jun-21-2018
Sample	35254-46a	35254-47a	35254-48a	35254-49a	35254-50a	35254-51a	35254-52a	35254-53a	35254-54a	35254-55a	35254-56a	35254-57a	35254-58a	35254-59a	35254-60a	35254-61a	35254-62a

PAT PROGRAMS"
AIHA PROFICENCY ANALYTICAL TESTING PROGRAMS

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

NALMICAL TESTING PRI LAB# 202314

4/5

*Legend and Explanation of Terms

CR - clean room; sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room", Must not exceed 0.02 fibres per mi AMB -- ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC -- occupational: sample collected on a worker within the work area, Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL. - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)



regulation.

LAB# 202314



ASBESTOS TESTING LABORATORIES

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de la Loi sur l'acc9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054

> Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting Project:

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6536374 Client No.: 35254-83b Location: Wheelhouse-Fwd Port Window Sill

Area (cm2): 100

Density (s/mm²): <19.2

Concentration (s/cm²): <925 Asbestos Type(s): None Detected

Lab No.:6536375

Location: Wheelhouse-Mid Stbd Top Of Client No.: 35254-84b

Console

Area (cm2): 100

Density (s/mm²): 19.2

Concentration (s/cm²): 925 Asbestos Type(s): Chrysotile

Lab No.:6536376 Client No.: 35254-85b Location: Wheelhouse-Mid Stbd Inside Console Concentration (s/cm²): <925

Area (cm2): 100

Asbestos Type(s): None Detected

Density (s/mm²): <15.4

Lab No.:6536377 Client No.: 35254-86b Location: Wheelhouse-Fwd Stbd Inside Console Concentration (s/cm²): 1850

Area (cm²): 100

Asbestos Type(s): Chrysotile

Density (s/mm²): 19.2

Lab No.:6536378

Client No.: 35254-87b

Location: Field Blank Area (cm²): Blank

Density (s/mm²): <15.4

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature:

Analyst:

Dated: 6/19/2018 11:01:40

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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> Telephone: 856-231-9449 Email: customerservice@iatl.com

Mt. Laurel, New Jersey 08054

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.:

566181 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/19/2018 11:01:40

Page 2 of 3



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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

6/19/2018 Report Date:

Report No.: 566181 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.:

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7) Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13) Note: Method analytical sensitivity of < 0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18) Note: *Results are for informational purposes only. Samples received on 0.8 um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



s.19(1)

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de la Loi sur l'accè Mr. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6536374 Client No.: 35254-83b

Volume Filtered (mL): 10 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):925

Area Sampled (cm²):100

Location: Wheelhouse-Fwd Port Window Sill

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤ 19.2 Structure Concentration (s/cm²): <925

None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Asbestos Type(s):

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s): None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6536375 Client No.: 35254-84b

Volume Filtered (mL): 10 Dilution Factor (mL):50 **Grid Openings:4**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Wheelhouse-Mid Stbd Top Of Console Filter Size (mm²): 962

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 19.2

Structure Concentration (s/cm²): 925

Asbestos Type(s): Chrysotile

Filter Type:MCE

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018 06/19/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/19/2018 11:01:41

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 1 of 4



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de la Loi sur l'acces a l'internation de la l'acces a l'internation de la l'acces a l'internation de la l'internation de l'internation Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

s.19(1)

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting Project:

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536376

Client No.: 35254-85b

Volume Filtered (mL):8 Dilution Factor (mL):50

Grid Openings:5

Opening Area (mm²):0.013 Area Analyzed (mm²): 0.0650 Sensitivity (s/mm²):15.4 Detection Limit (s/cm²):925

Structures < 5 Microns: None Detected

Area Sampled (cm2): 100

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤ 15.4 Structure Concentration (s/cm²): <925

Asbestos Structures: None Detected

Asbestos Type(s): None Detected

Filter Type: MCE Location: Wheelhouse-Mid Stbd Inside Console

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<15.4 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6536377 Client No.: 35254-86b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): 100

Location: Wheelhouse-Fwd Stbd Inside Console Filter Size (mm²): 962

Asbestos Structures: 2

Structures < 5 Microns: 1 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 1850

Page 2 of 4

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Pore Size (µm):0.45

Non-Asbestos Structures: 1

Structure Density (s/mm²):9.62 Structure Concentration (s/cm²):925

Non-Asbestos Type(s): SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature:

Analyst:

Dated: 6/19/2018 11:01:41

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



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a Loi sur l'accènta Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

6/19/2018

Report No.:

566181 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Report Date:

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6536378 Client No.: 35254-87b

Client: NOR765

Volume Filtered (mL):50 Dilution Factor (mL):50 **Grid Openings:5**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0650 Sensitivity (s/mm²):15.4 Detection Limit (s/cm²): NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2):Blank Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <15.4 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<15.4 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature:

Analyst:

Dated: 6/19/2018 11:01:41

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Page 3 of 4



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Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.:

566181 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 352:

Dated: 6/19/2018 11:01:41

Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Comment	Overloaded with Welding Dust	Overloaded with Welding Dust						Overloaded with Welding Dust		
62	N/A	N/A	٧	>	>	>	>	N/A	>	
n/n	N/A	N/A	*	۸	Μ	۸	Μ	N/A	Μ	
Concen. (fib/mL)	W/A	W/N	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	N/A	N/A	2.55	7.01	5.73	8.92	5.10	N/A	3.18	0.00
Volume (L)	1098,62	1082,32	1950	1953.25	1956.96	1982.08	646	130	818.26	0
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	70	70	2.0	5.5	4.5	7.0	4.0	OL	2.5	0.0
Time (Mins)	337	332	009	601	604	809	767	40	251	0
Time	13:33	13:34	18:07	18:12	18:20	18:29	18:36	14:31	18:42	00:00
Time On	07:56	08:02	08:07	08:11	08:16	08:21	13:44	13:51	14:31	00:00
Avg. Flow Rate (lpm)	3.26	3.26	3,25	3.25	3.24	3.26	3.25	3.25	3.26	0
Analyst	BR	BR	BR	BR	BR	BR	BR	BR	BR	æ
Туре*	АМВ	AMB	AMB	AMB	AMB	AMB	AMB	АМВ	AMB	ος
Area	(AMB) MCR 1	(AMB) AMS 1	(AMB) Aft Oilers Cabin	(AMB) Lounge	(AMB) Bridge	(AMB) Gym	(AMB) MCR 2	(AMB) AMS 2	(AMB) AMS 3	35254-10a May-31-2018 Jun-01-2018 (QC) Field Blank
Date Analysed	35254-1a May-31-2018 Jun-01-2018 (AMB) MCR 1	35254-2a May-31-2018 Jun-01-2018 (AMB) AMS 1	35254-3a May-31-2018 Jun-01-2018	May~31-2018 Jun-01-2018	35254-5a May-31-2018 Jun-01-2018 (AMB) Bridge	May-31-2018 Jun-01-2018	May-31-2018 Jun-01-2018	35254-8a May-31-2018 Jun-01-2018 (AMB) AMS 2	May-31-2018 Jun-01-2018	Jun-01-2018
Date Collected	May-31-2018	May-31-2018	May-31-2018		May-31-2018			May-31-2018		May-31-2018
Sample No	35254-1a	35254-2a	35254-3a	35254-4a	35254-5a	35254-6a	35254-7a	35254-8a	35254-9a	35254-10a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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						,		-	,			_	,		r	
Comment	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										PAPR / Vacuuming, Brushing, and Wiping Surfaces					
ბ 01	٧	٧		٧		٧	٧	٧		٧	٧		٧		٧	\ \
w/w	>	^		>		>	^	>		>	*		3		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16,56	00.0	8,92	7.64	12,10	3.18	9.55	5.10	00.00	6.37	16.1	7.01	15.29
Volume (L)	62.64	263.61	0	1798,72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305,6
Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	6.0	9.5	2.5	7.5	4.0	0.0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2.61	0	2.92	0	2.92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Analyst	Œ	OC	OC	BR.	BR	BR	BR	BR	BR	ЭD	Oſ	Ωſ	Ð	ar	Ð	Ωſ
Type*	2200	AMB	ည	AMB	ည	AMB	AC	AC	ည	AMB	2200	သ	AMB	ဘဲ	AMB	AC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance		(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	Jun-07-2018 (QC) Field Blank	(AMB) MER Adj. AMS Entryway	35254-21a Jun-07-2018 Jun-08-2018 (AMS)	(QC) Field Blankl	(AMB) Poop Deck Port Alleyway		(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	35254-11a Jun-05-2018 Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	35254-17a Jun-06-2018 Jun-07-2018 (AC) Gym	Jun-07-2018		Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	35254-26a Jun-09-2018 Jun-10-2018
Date Collected	Jun-05-2018	35254-12a Jun-05-2018	Jun-05-2018	35254-14a Jun-06-2018	Jun-06-2018	35254-16a Jun-06-2018	Jun-06-2018	35254-18a Jun-06-2018	35254-19a Jun-06-2018	Jun-07-2018	Jun-07-2018	35254-22a Jun-07-2018	Jun-08-2018	35254-24a Jun-08-2018	35254-25a Jun-09-2018 Jun-10-2018	Jun-09-2018
Sample	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a



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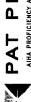
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Comment																		Top Level / PAPR	/ 4th Level / PAPR
7 00	٧	٧	٧	v	٧	\ \	٧	٧			v		٧	v		v	v	·	٧
w/v	≥	3	3	₹	>	>	>	>			>		^	>		3	^	>	≥
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22.93	22.29	00.00	00'0	8.28	0.00	21.66	13.38	00.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512.95	2497.72	0	0	545,49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	209	0	153	153	0	149	143	32	78
Time Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
Time On	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10;24	10:34	14:40	14:47
Avg. Flow Rate (lpm)	2.1	2,35	15.46	15.23	15,46	15.23	15,23	15.23	0	0	2.61	0	16	16	0	15.25	15.25	2.6	2.6
Analyst	Ð	Œ	Ωſ	ЭD	QC	ЭD	JD	ac	ЭD	JD.	JD.	JD	ЭD	ЭD	JD	ЭD	JD	Ωſ	e,
Type*	AMB	AMB	AC	AC	AC	AC	AC	AC	ÓC	QC	AMB	οc	AC	AC	ЭÒ	AC	AC	220	220
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	Jun-15-2018 (AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	(OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Date Collected	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-12-2018	Jun-12-2018	35254-39a Jun-12-2018	35254-40a Jun-12-2018	35254-41a Jun-12-2018	35254-42a Jun-15-2018	35254-43a Jun-15-2018	35254-44a Jun-15-2018	35254-45a Jun-15-2018
Sample No	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a



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Comment																	
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v/vv	^		>	≥		>	>	>	>			>		≥	^		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	1.91	00.00	7.01	5,10	1.27	13.38	7.01	27.39	22.93	1.27	3.18	0.00	00.0	0.64	1.27	1.27	0.00
Volume (L)	458.4	0	2168	2168	0	2354.48	2354.48	2354.48	2354.48	0	0	869.75	0	2555.12	2648.6	0	0
# Fields	001	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.5	0.0	5.5	4.0	1.0	10.5	5.5	21.5	18.0	1.0	2.5	0.0	0.0	0.5	1.0	1.0	0'0
Time (Mins)	191	0	271	271	0	152	152	152	152	0	0	355	0	164	170	0	0
Time Off	13:56	00:00	15:34	15:34	00:00	11:28	11:28	11:41	11:41	00:00	00:00	14:51	00:00	12:57	12:59	00:00	00:00
Time	10:45	00:00	11:03	11:03	00:00	95:80	95:80	60:60	60:60	00:00	00:00	08:56	00:00	10:13	10:09	00:00	00:00
Avg. Flow Rate (ipm)	2,4	0	8	8	0	15.49	15.49	15,49	15.49	0	0	2.45	0	15.58	15.58	0	0
Analyst	Qſ	Ωſ	ar	JD	ar	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	88	BR
Type*	AMB	χ,	AC	AC	ဘဲ	AC	AC	AC	AC	о́с	ρò	AMB	သ	AC	AC	оc	ъò
Area	(AMB) MER Below Stack	35254-47a Jun-16-2018 Jun-17-2018 (QC) Field Blank	35254-48a Jun-16-2018 Jun-17-2018 (AC) Wheelhouse	35254-49a Jun-16-2018 Jun-17-2018 (AC) Wheelhouse	Jun-17-2018 (QC) Field Blank	35254-51a Jun-17-2018 Jun-18-2018 (AC) Cargo Hold 1	35254-52a Jun-17-2018 Jun-18-2018 (AC) Cargo Hold 1	35254-53a Jun-17-2018 Jun-18-2018 (AC) Winch Room 1	35254-54a Jun-17-2018 Jun-18-2018 (AC) Winch Room 2	Jun-17-2018 Jun-18-2018 (QC) Field Blank 1	Jun-18-2018 (QC) Field Blank 2	(AMB) Mer Below Stack	35254-58a Jun-19-2018 Jun-19-2018 (QC) Field Blank	(AC) Stack	(AC) Stack	35254-61a Jun-21-2018 Jun-21-2018 (QC) Field Blank	35254-62a Jun-21-2018 Jun-21-2018 (QC) Field Blank
Date Analysed	35254-46a Jun-16-2018 Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	35254-57a Jun-19-2018 Jun-19-2018	Jun-19-2018	35254-59a Jun-21-2018 Jun-21-2018 (AC) Stack	35254-60a Jun-21-2018 Jun-21-2018 (AC) Stack	Jun-21-2018	Jun-21-2018
Date Collected	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-16-2018	35254-50a Jun-16-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018		Jun-17-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018	Jun-21-2018	Jun-21-2018	Jun-21-2018
Sample No	35254-46a	35254-47a	35254-48a	35254-49a	35254-50a	35254-51a	35254-52a	35254-53a	35254-54a	35254-55a	35254-56a	35254-57a	35254-58a	35254-59a	35254-60a	35254-61a	35254-62a



PAT PROGRAMS AITH PROFICIENCY ANALTTICAL TESTING PROGRAMS

LAB# 202314

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*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant, Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml. (unprotected persons)

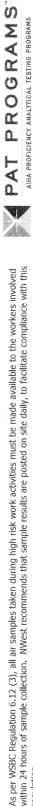


Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)



LAB# 202314

FICIENCY ANALYTICAL TESTING PROOF

regulation.



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 19, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Comment	Overloaded with Welding Dust	Overloaded with Welding Dust						Overloaded with Welding Dust		
LOQ	N/A	N/A	>	٧	<	v	٧	N/A	>	
^/v	N/A	N/A	>	^	W	^	Α	N/A	γ	
Concen. (fib/mL)	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	N/A	N/A	2.55	7.01	5.73	8.92	5.10	N/A	3.18	00'0
Volume (L)	1098.62	1082,32	1950	1953.25	1956.96	1982,08	949	130	818.26	0
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	OL	ОГ	2.0	5.5	4.5	7.0	4.0	OL	2.5	0.0
Time (Mins)	337	332	009	109	604	809	767	40	251	0
Time Off	13:33	13:34	18:07	18:12	18:20	18:29	18:36	14:31	18:42	00:00
Time On	07:56	08:02	08:07	08:11	08:16	08:21	13:44	13:51	14:31	00:00
Avg. Flow Rate (ipm)	3.26	3.26	3.25	3.25	3,24	3.26	3.25	3.25	3.26	0
Analyst	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR
Type*	AMB	AMB	AMB	AMB	AMB	AMB	AMB	АМВ	AMB	ဘဲ
Area	(AMB) MCR 1	(AMB) AMS 1	May-31-2018 Jun-01-2018 (AMB) Aft Oilers	35254-4a May-31-2018 Jun-01-2018 (AMB) Lounge	(AMB) Bridge	(AMB) Gym	(AMB) MCR 2	(AMB) AMS 2	(AMB) AMS 3	35254-10a May-31-2018 Jun-01-2018 (QC) Field Blank
Date Analysed	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018
Date Collected	35254-1a May-31-2018 Jun-01-2018 (AMB) MCR 1	35254-2a May-31-2018 Jun-01-2018 (AMB) AMS 1	May-31-2018	May-31-2018	May-31-2018 Jun-01-2018	May-31-2018 Jun-01-2018 (AMB) Gym	35254-7a May-31-2018 Jun-01-2018 (AMB) MCR 2	May-31-2018 Jun-01-2018 (AMB) AMS 2	May-31-2018 Jun-01-2018 (AMB) AMS 3	May-31-2018
Sample No	35254-1a	35254-2a	35254-3a	35254-4a	35254-5a	35254-6a	35254-7a	35254-8a	35254-9a	35254-10a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

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Comment	' Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										/ Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
100	٧	>		>		>	V	v		٧	٧		>		v	v
A/AA 100	×	^		^		>	^	۸		>	3		*		>	>
Concen. (fib/mL)	<0.01	0,023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	00.0	8.92	7,64	12,10	3,18	9.55	5.10	00.0	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	001	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	6.0	9.5	2.5	7.5	4.0	0'0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2.61	0	2.92	0	2.92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Analyst	OC	JD	Of	BR	BR	BR	BR	BR	BR	ЭD	Œ	Or	JD	Ωſ	Ωſ	Of
Type*	220	AMB	χ,	AMB	ე ბ	AMB	AC	AC	ος	AMB	330	ည	AMB	Э С	AMB	AC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance	(QC) Field Blank	(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational (AMS)	(QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	35254-11a Jun-05-2018 Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	35254-21a Jun-07-2018 Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	Jun-05-2018	35254-12a Jun-05-2018	Jun-05-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	Jun-08-2018	Jun-09-2018	35254-26a Jun-09-2018
Sample No	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a



PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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Comment																		/ Top Level / PAPR	/ 4th Level / PAPR
801	٧	٧	٧	٧	V	٧	v	v			٧		v	٧		\ \	٧	٧	v
n/n	3	3	3	≥	>	>	>	>			>		>	>		≥	3	>	8
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15,92	17.20	22,93	22.29	0.00	0.00	8.28	0.00	21.66	13,38	00.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512.95	2497.72	0	0	545.49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
#Ibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	209	0	153	153	0	149	143	32	28
Time Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
Time On	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (Ipm)	2.1	2.35	15.46	15.23	15.46	15,23	15.23	15,23	0	0	2.61	0	16	16	0	15.25	15.25	2.6	2.6
Analyst	ЭD	Οť	Ωſ	e,	JD	e E	Ð.	ar	JD	QΓ	Οť	JD	JD	ac	OC	Of.	OC	οι	OC
Type*	AMB	AMB	AC	AC	AC	AC	AC	AC	ဘဲ	οc	AMB	οc	AC	AC	о̀с	AC	AC	220	220
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj, Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	Jun-15-2018 (OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Date Collected	35254-27a Jun-10-2018	Jun-10-2018	35254-29a Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	35254-34a Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	35254-45a Jun-15-2018
Sample	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a



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Sample	Date Collected	Date Analysed	Area	Туре*	Analyst	Avg. Flow Rate (lpm)	o no	E &	Time Mins)	#Hbres	Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	n/n	100	Comment
46a J.	un-16-2018	35254-46a Jun-16-2018 Jun-17-2018	(AMB) MER Below Stack	AMB	OC	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	}	٧	
-47a J.	un-16-2018	Jun-17-2018	35254-47a Jun-16-2018 Jun-17-2018 (QC) Field Blank	<u>ي</u>	Ωſ	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
-48a Jt	35254-48a Jun-16-2018	Jun-17-2018	Jun-17-2018 (AC) Wheelhouse	AC	Ωſ	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	>	٧	
-49a Jı	un-16-2018	Jun-17-2018	35254-49a Jun-16-2018 Jun-17-2018 (AC) Wheelhouse	AC	9	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	≷	٧	
-50a Jt	35254-50a Jun-16-2018	Jun-17-2018	Jun-17-2018 (QC) Field Blank	ЭÒ	ac	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
-51a Ju	un-17-2018	Jun-18-2018	35254-51a Jun-17-2018 Jun-18-2018 (AC) Cargo Hold 1	AC	BR	15.49	98:50	11:28	152	10.5	100	2354,48	13.38	<0.01	>	×	
-52a Jt	un-17-2018	Jun-18-2018	35254-52a Jun-17-2018 Jun-18-2018 (AC) Cargo Hold 1	AC	BR	15.49	95:80	11:28	152	5.5	100	2354,48	7.01	<0.01	>	<	
-53a Jı	un-17-2018	Jun-18-2018	35254-53a Jun-17-2018 Jun-18-2018 (AC) Winch Room 1	AC	BR	15.49	60:60	11:41	152	21.5	100	2354.48	27.39	<0.01	>	v	
-54a Ju	un-17-2018	Jun-18-2018	35254-54a Jun-17-2018 Jun-18-2018 (AC) Winch Room 2	AC	BR	15.49	60:60	11:41	152	18.0	100	2354.48	22,93	<0.01	>	٧	
-55a Jı	un-17-2018	Jun-18-2018	35254-55a Jun-17-2018 Jun-18-2018 (QC) Field Blank 1)	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
-56a Jı	un-17-2018	Jun-18-2018	35254-56a Jun-17-2018 Jun-18-2018 (QC) Field Blank 2	ЭÒ	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
-57a	un-19-2018	Jun-19-2018	35254-57a Jun-19-2018 Jun-19-2018 (AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	8	v	
-58a Jı	35254-58a Jun-19-2018	Jun-19-2018	Jun-19-2018 (QC) Field Blank	фc	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

involved PAT PROGRAMS with this AIMA PROFILENCY DANACTURAL TESTING PROGRAMS

LAB# 202314

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per mi.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml. (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

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Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 22, 2018

Client Job or PO#: F1782-180965

Project number: 35254

				Γ	Γ		Γ	·		-
Comment	Overloaded with Welding Dust	Overloaded with Welding Dust						Overloaded with Welding Dust		
001	N/A	N/A	\ \	v	~	v	V	N/A	٧	
w/w	N/A	N/A	≯	>	3	>	₹	N/A	8	
Concen. (fib/mL)	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	N/A	N/A	2.55	7.01	5.73	8,92	5.10	N/A	3.18	00.0
Volume (L)	1098.62	1082.32	1950	1953.25	1956.96	1982.08	646	130	818.26	0
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	ОГ	OF	2.0	5.5	4,5	7.0	4.0	OF	2.5	0.0
Time (Mins)	337	332	009	601	604	809	292	40	251	0
Time	13:33	13:34	18:07	18:12	18:20	18:29	18:36	14:31	18:42	00:00
Time	07:56	08:07	08:07	08:11	08:16	08:21	13:44	13:51	14:31	00:00
Avg. Flow Rate (ipm)	3.26	3.26	3.25	3,25	3,24	3,26	3.25	3.25	3.26	0
Analyst	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR
Type*	АМВ	AMB	AMB	AMB	AMB	AMB	AMB	АМВ	AMB	ઝ ò
Area	(AMB) MCR 1	(AMB) AMS 1	(AMB) Aft Oilers Cabin	(AMB) Lounge	(AMB) Bridge	(AMB) Gym	(AMB) MCR 2	(AMB) AMS 2	(AMB) AMS 3	35254-10a May-31-2018 Jun-01-2018 (QC) Field Blank
Date Analysed	Jun-01-2018	Jun-01-2018	Jun-01-2018		Jun-01-2018			Jun-01-2018		Jun-01-2018
Date Collected	35254-1a May-31-2018 Jun-01-2018 (AMB) MCR 1	35254-2a May-31-2018 Jun-01-2018 (AMB) AMS 1	35254-3a May-31-2018 Jun-01-2018	May-31-2018 Jun-01-2018	35254-5a May-31-2018 Jun-01-2018 (AMB) Bridge	35254-6a May-31-2018 Jun-01-2018	May-31-2018 Jun-01-2018	35254-8a May-31-2018 Jun-01-2018 (AMB) AMS 2	May-31-2018 Jun-01-2018	May-31-2018
Sample	35254-1a	35254-2a	35254-3a	35254-4a	35254-5a	35254-6a	35254-7a	35254-8a	35254-9a	35254-10a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Comment	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										PAPR / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
100	V	٧		٧		٧	~	٧		٧	٧		٧		V	v
v/v	W	^		>		>	>	>		>	8		₹		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	. <0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	00'0	8.92	7.64	12.10	3.18	9.55	5.10	00'0	6.37	1.91	7.01	15.29
Volume (L)	62,64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133,11	0	942,48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	0.9	9.5	2.5	7.5	4.0	0.0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time Off	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (ipm)	2.61	2,61	0	2.92	0	2,92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Analyst	Œ	ЭD	ar	BR	BR	BR	BR	BR	BR	OC	Oſ	ac	JD	ac	JD	JD
Type*	2200	AMB	óc	AMB	ос	AMB	AC	AC	ъ	AMB	2200	ე ბ	AMB	ЭÒ	AMB	AC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance		(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational (AMS)	35254-22a Jun-07-2018 Jun-08-2018 (QC) Field Blankl	(AMB) Poop Deck Port Alleyway		(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	35254-11a Jun-05-2018 Jun-06-2018	35254-12a Jun-05-2018 Jun-06-2018	Jun-06-2018	35254-14a Jun-06-2018 Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018 (AC) Gym	Jun-07-2018	Jun-07-2018	Jun-08-2018	35254-21a Jun-07-2018 Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	Jun-05-2018	Jun-05-2018	Jun-05-2018	Jun-06-2018	35254-15a Jun-06-2018	Jun-06-2018	35254-17a Jun-06-2018	Jun-06-2018	35254-19a Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	35254-24a Jun-08-2018	Jun-09-2018	35254-26a Jun-09-2018 Jun-10-2018
Sample	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a



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Comment																		/ Top Level / PAPR	/ 4th Level / PAPR
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na/a	3	3	≥	3	>	>	>	>			>		>	>		3	3	>	3
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0,01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22.93	22.29	00.00	0.00	87.8	0.00	21.66	13,38	0.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512.95	2497.72	0	0	545.49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	6.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	209	0	153	153	0	149	143	32	28
Time of	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
Time On	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (ipm)	2.1	2,35	15.46	15.23	15.46	15.23	15.23	15.23	0	0	2.61	0	16	16	0	15.25	15.25	2.6	2.6
Analyst	O.	O.	Д	ð	OC	e.	Я	e.	OC	JD Of	Д	O.	ЭD	D,	JD.	Ωſ	OC	Ð.	OC
Туре*	АМВ	АМВ	AC	AC	AC	AC	AC	AC	оc	ос	AMB	о́с	AC	AC	ОС	AC	AC	သဝ	220
Area	(AMB) Poop Deck - Alleyway Adj, Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	(OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Date Collected	35254-27a Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	35254-34a Jun-10-2018	Jun-10-2018	35254-36a Jun-10-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	35254-40a Jun-12-2018	35254-41a Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	35254-45a Jun-15-2018
Sample	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a



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Comment																				Pump failure	
100	v		v :	v		v	٧	٧	٧			v		٧	٧			>	٧		
v/vv L0Q	Λ		>	W		^	۸	^	>			>		>	>			^	3		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	N/A	<0.01
Density (fib/mm2)	1.91	00.00	7.01	5,10	1.27	13.38	7.01	27.39	22.93	1.27	3.18	0.00	00'0	0.64	1.27	1.27	00.0	9.55	4,46	N/A	1.27
Volume (L)	458.4	0	2168	2168	0	2354.48	2354.48	2354.48	2354.48	0	0	869.75	0	2555.12	2648.6	0	0	183.06	775.18	N/A	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.5	0.0	2'2	4.0	1.0	10.5	5.5	21.5	18.0	1.0	2.5	0.0	0.0	0.5	1.0	1.0	0.0	7.5	3.5	0.9	1.0
Time (Mins)	191	0	271	271	0	152	152	152	152	0	0	355	0	164	170	0	0	18	343	N/A	0
Time	13:56	00:00	15:34	15:34	00:00	11:28	11:28	11:41	11:41	00:00	00:00	14:51	00:00	12:57	12:59	00:00	00:00	08:57	13:48	N/A	00:00
Time	10:45	00:00	11:03	11:03	00:00	08:56	08:56	60:60	60:60	00:00	00:00	08:56	00:00	10:13	10:09	00:00	00:00	07:36	08:05	08:01	00:00
Avg. Flow Rate (ipm)	2.4	0	8	8	0	15,49	15,49	15.49	15.49	0	0	2.45	0	15.58	15.58	0	0	2.26	2,26	2.25	0
Analyst	ac	Ωſ	ar	ar	OC	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	æ	BR	R
Type*	AMB	ე ბ	AC	AC	οc	ΑC	AC	AC	AC	8	გ,	AMB	ည	AC	AC	ည	ည	သွ	AMB	AMB	<u>ې</u>
Area	(AMB) MER Below Stack	Jun-17-2018 (QC) Field Blank	(AC) Wheelhouse	Jun-17-2018 (AC) Wheelhouse	Jun-17-2018 (QC) Field Blank	Jun-18-2018 (AC) Cargo Hold 1	(AC) Cargo Hold 1	Jun-18-2018 (AC) Winch Room 1	(AC) Winch Room 2	(QC) Field Blank 1	(QC) Field Blank 2	(AMB) Mer Below Stack	(QC) Field Blank	(AC) Stack	(AC) Stack	Jun-21-2018 (QC) Field Blank	(QC) Field Blank	(OCC) MER	(AMB) U.D. Port Alleyway	(AMB) U.D. Starboard Alleyway	
Date Analysed	Jun-17-2018		Jun-17-2018				Jun-18-2018		Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018	Jun-21-2018		Jun-21-2018	Jun-22-2018 (OCC) MER	Jun-22-2018	Jun-22-2018	Jun-22-2018
Date Collected	35254-46a Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018	Jun-21-2018	35254-61a Jun-21-2018	Jun-21-2018	Jun-22-2018	Jun-22-2018	Jun-22-2018	35254-66a Jun-22-2018
Sample	35254-46a	35254-47a	35254-48a	35254-49a	35254-50a	35254-51a	35254-52a	35254-53a	35254-54a	35254-55a	35254-56a	35254-57a	35254-58a	35254-59a	35254-60a	35254-61a	35254-62a	35254-63a	35254-64a	35254-65a	35254-66a



LAB# 202314

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*Legend and Explanation of Terms

CR - dean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker) AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)



LAB# 202314

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CCGS-NGCC, Bartlett Chief Engineer

From:

CCGS-NGCC, Bartlett Captain

Sent:

May-29-18 10:57 AM

To:

McNish Joanne

Cc:

'(ROCSupt@dfo-mpo.gc.ca)'; CCGS-NGCC, Bartlett Chief Engineer

Subject:

FW: Bartlett Results

Attachments:

image001.png; 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1

V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

Joanne;

Attached is an asbestos results report from wipe samples taken by North West Environmental at the onset of this refit.

Of concern are the elevated and high results in some areas.

We do not have the knowledge or skills to address these levels, so have asked Marine Engineering to invite North West to come down to the ship and advise on mitigation measures.

Is there an Asbestos Advisory Group in Ottawa whose experts can advise on a strategy moving forward?

Chief Engineer Jackson and myself can come up to discuss if you have some time.

Mike

Captain Mike McCullagh
Commanding Officer, CCGS Bartlett
Email: BartlettCO@bar.ccgs-ngcc.gc.ca

Cell:

Tellular:

Victoria CG Base Landline: 250.480.2692

Irridium Voice: Irridium Data:

Mailing Address: 25 Huron Street

Victoria BC V8V 4V9

9 50

Government of Canada Gouvernement

Canada

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: May-29-18 10:24 AM **To:** CCGS-NGCC, Bartlett Captain **Subject:** FW: Bartlett Results

Asbestos and lead paint test results from pre-refit sampling arranged by WC.

Matt Jackson Chief Engineer CCGS Bartlett
Cell:
BartlettCE@ccgs-ngcc.gc.ca

Document Released Under the Access to ls.16(2) ation Act / Document divulgué en vertu de la Loi sur l'accès à l'information. s.19(1)

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.qc.ca]

Sent: May-29-18 10:17 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: Fw: Bartlett Results

Matt,

I'll look over these and we can talk in the afternoon. We can meet with NWE onboard tomorrow if you think we should.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From

Sent: Tuesday, May 29, 2018 10:01

To: Chaikin, Gabriel

Cc:

Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

- 1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
- 2. Moderate range (> 10,000 50,000 s/cm2):
 - a. Bridge mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck stb aft alleyway deckhead cavity
 - e. N bridge deck bridge deckhead cavity
- 3. Elevated range (> 50,000 100,000 s/cm2):
 - a. Bridge fwd/port console
 - b. Bridge Fwd middle console
 - c. MCR port side top of ducting
 - d. Upper deck aft oilers cabin deckhead cavity
 - e. Gym top of electrical cabinet

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- 4. High range (> 100,000 s/cm2):
 - a. Bridge fire panel console (mid port console)
 - b. AMS wireway above sewage tank
 - c. MER wireway adj. escape hatch
 - d. Upper deck stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting leadcontaining paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



Project Manager North West Environmental Group Ltd.

From:

Sent: May 29, 2018 8:43 AM

To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>;

Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.

Thanks for your patience,



Project Manager North West Environmental Group Ltd.

From: Chaikin, Gabriel < Gabriel. Chaikin@dfo-mpo.gc.ca>

Sent: May 29, 2018 8:15 AM

To:

Subject: Bartlett Results

Good day and

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

No information has been removed or severed from this page	

Sent from my BlackBerry 10 smartphone on the Bell network.

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de la Loi sur l'accès à l'information.

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North West Environmental Group Ltd.

Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018

Client Job or PO#: NEED Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-1b	Port Windlass	May-17-2018	ЭD	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	
35254-2b	Starboard Windlass	May-17-2018	ОС	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	ЭD	Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver	Pipe Wrap - White/Silver	20	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	Оſ	Pipe Insulation - Textile Pipe Insulation - over Fibreglass	Pipe Insulation - Yellow	20	None Detected	0	Glass	901	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	Оſ	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	Ωſ	Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver	Pipe Wrap - White/Silver	05	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	Оſ	Pipe Insulation - Textile Pipe Insulation - over Fibreglass Yellow	Pipe Insulation - Yellow	20	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space May-17-2018 (Fire Station 18)	May-17-2018	Ωſ	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	



AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

001073

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	8	% Other Materials	%	Comments
35254-7b	Auxiliary Machine Space May-17-2018	May-17-2018	Œ	Teal Gasket	Teal	100	100 None Detected	0	Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)	100	
35254-8b Layer 1	Main Engine Room (Fire May-17-2018 Station 16)	May-17-2018		Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver	Pipe Wrap - White/Silver	20	50 None Detected	0	Glass (30%) 0 Non-Fibrous (60%) Cellulose (10%)	100	
35254-8b Layer 2	Main Engine Room (Fire May-17-2018 JD Station 16)	May-17-2018		Pipe Insulation - Textile Pipe Insulation - over Fibreglass Yellow	Pipe Insulation - Yellow	20	50 None Detected	0	0 Glass	100	
35254-9b	Main Engine Room (Fire May-17-2018 JD Station 16)	May-17-2018		Black Gasket	Black	100	100 None Detected	0	Cellulose (15%) Non-Fibrous (85%)	92	



001074

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514632 Client No.: 35254-13b Location: Bridge-Fire Panel Console (Mid Port Concentration (s/cm²): 178000

Asbestos Type(s): Chrysotile Amosite

Console) Area (cm2): 100

Density (s/mm²): 1850

Lab No.:6514633 Client No.: 35254-14b Location: A.M.S. (Wireway Above Sewage

Tank)

Area (cm2): 50

Concentration (s/cm²): 222000 Asbestos Type(s): Chrysotile

Density (s/mm²): 231

Lab No.:6514634 Client No.: 35254-15b Location: M.E.R. (Wireway Adjacent To Escape Concentration (s/cm²): 111000

Hatch)

Area (cm2): 100

Asbestos Type(s): Chrysotile Tremolite Amosite

Density (s/mm²): 57.7

Lab No.:6514635 Client No.: 35254-16b **Location:** Bridge-(Forward Port Console)

Area (cm2): 100

Density (s/mm²): 135

Density (s/mm²): 231

Concentration (s/cm²): 64800

Asbestos Type(s): Amosite Chrysotile

Lab No.:6514636 Client No.: 35254-17b **Location:** Bridge-(Forward Middle Console)

Area (cm2): 100

Concentration (s/cm²): 55500

Asbestos Type(s): Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:29

Approved By:

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Project: CCGS Bartlett-General Hazmat Consulting

35254 Project No.:

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514637 Client No.: 35254-18b Location: Bridge-(Forward Starboard Console) Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Density (s/mm²): <9.62

Concentration (s/cm²): 27800

Asbestos Type(s): Amosite Chrysotile

Client No.: 35254-19b

Lab No.:6514638

Location: Bridge-(Mid Starboard Console) Area (cm2): 100

Density (s/mm²): 115

Concentration (s/cm²): 17000

Lab No.:6514639 Client No.: 35254-20b Location: MCR-Console Area (cm2): 100

Density (s/mm²): 106

Area (cm2): 100

Asbestos Type(s): Chrysotile Amosite

Lab No.:6514640 Client No.: 35254-21b

Location: MCR-Top Of Console

Area (cm2): 100

Density (s/mm²): 67.3

Concentration (s/cm²): 16200 **Asbestos Type(s):** Chrysotile

Location: MCR-Port Side-Top Of Ducting Concentration (s/cm²): 55500

Lab No.: 6514641 Client No.:35254-22b

Area (cm2): 100

Asbestos Type(s): Chrysotile Amosite

Density (s/mm²): 28.8

Lab No.:6514642 Client No.: 35254-23b

Location: MCR-Port Side-Wireway Adjacent

Switch Console

Concentration (s/cm²): 6480 Asbestos Type(s): Chrysotile Area (cm2): 100

Density (s/mm²): 67.3

Lab No.:6514643 Client No.: 35254-24b Location: Upper D: Starboard Aft Alleyway-

Deckhead Cavity

Area (cm2): 100 Density (s/mm²): 57.7 Concentration (s/cm²): 27800

Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Approved By:

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

		CERTIFICATE OF ANAL	YSIS	
Client: North West Env	ironmental Gr	oup Ltd. Re	port Date:	5/23/2018
201 - 415 Gorge	Road East	Re	port No.:	564091 - TEM Dust
		_		Wipe
Victoria BC	V8T 2W1		oject:	CCGS Bartlett-General Hazmat Consulting
Client: NOR765		Pr	oject No.:	35254
	TE	EM WIPE SAMPLE ANALY	SIS SU	MMARY
-L N (51 4(44		I A A WA A A WA A A A A A A A A A A A A		204000
Lab No.:6514644 Client No.:35254-25b		Location: Upper D: Stbd Aft Watertight D DH Cavity		oncentration (s/cm²): 204000 bestos Type(s): Chrysotile Amosite
	A	Area (cm²): 100		
	<u>]</u>	Density (s/mm²): 212		
Lab No.:6514645	1	Location: Upper D: Aft Oilers Cabin-Decl	khead Co	ancentration (s/cm²)· 37000
Client No.: 35254-26b		Cavity		bestos Type(s): Chrysotile
		Area (cm²): 100		
	<u>I</u>	Density (s/mm²): 19.2		
ab No.:6514646]	Location: Poop D: (P-2) Logistics Office-	Co	oncentration (s/cm²): <4630
Client No.: 35254-27b	I	Deckhead Cavity		bestos Type(s): None Detected
		Area (cm²): 100		
		Density (5/mm). \9.02		
Lab No.:6514647	ı	Location: N. Bridge D: (N-5) Cadet Cabin	1- Co	oncentration (s/cm²): <9250
Client No.: 35254-28b	I	Deckhead Cavity		bestos Type(s): None Detected
		Area (cm²): 100		
		Density (5/min-): \9.02		
Lab No.:6514648	1	Location: N. Bridge D: Bridge-Deckhead	Cavity Co	oncentration (s/cm²): 16200
Client No.: 35254-29b	A	Area (cm²): 100		bestos Type(s): Chrysotile Actinolite
	<u>]</u>	Density (s/mm²): 67.3		
Lab No.:6514649	3	Location: M.E.RAft Port (Metal Plate Be	eneath C o	oncentration (s/cm²): <4630
Client No.:35254-30b		Wireway)		bestos Type(s): None Detected
		Area (cm²): 50		
	<u>i</u>	Density (s/mm ²): <9.62		
ab No.:6514650]	Location: Gym-Top Of Electrical Cabinet	Co	oncentration (s/cm²): 83300
Client No.: 35254-31b	A	Area (cm²): 100		bestos Type(s): Chrysotile Amosite
	1	Density (s/mm ²): 86.5		
Please refer to the Preface	of this report	t for further information regarding your	analysis.	

Dated: 5/28/2018 4:18:29

Fred E Charlett III

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

01 415 Carra David Fart

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514651 Client No.:35254-31 Location: Additional Sample Received

Area (cm²): 100 Density (s/mm²): 9.62 Concentration (s/cm²): 925 Asbestos Type(s): Actinolite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:29

Approved By:

Fre Enafel

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 5/28/2018 4:18:29

Page 5 of 6

001079



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13) Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

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Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514632 Client No.: 35254-13b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings:2

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0260 Sensitivity (s/mm²):38.5

Detection Limit (s/cm²):3700

Micrograph Number:

EDXA Spectrum ID: 1:14:07PM

Lab No.:6514633 Client No.: 35254-14b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings:8 Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): 100

Location: Bridge-Fire Panel Console (Mid Port

Console)

Asbestos Structures: 48

Structures < 5 Microns: 44 Structures $\geq 5 \mu m$: 4

Structure Density (s/mm²): 1850

Structure Concentration (s/cm²): 178000

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm2):50

Location: A.M.S. (Wireway Above Sewage

Tank)

Asbestos Structures: 24

Structures < 5 Microns: 22 Structures $\geq 5 \mu m$: 2

Structure Density (s/mm²): 231

Structure Concentration (s/cm²): 222000

Asbestos Type(s):

Chrysotile

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<38.5

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018 05/23/2018

Date Analyzed:

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Grid Openings:8

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting Project:

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Area Sampled (cm²): 100 Lab No.:6514634

Location: M.E.R. (Wireway Adjacent To Escape Filter Size (mm²): 962 Client No.: 35254-15b

Asbestos Structures: 6 Volume Filtered (mL): 0.25

Dilution Factor (mL):50

Opening Area (mm²):0.013 Structures \geq 5 μ m: 3

Area Analyzed (mm²):0.104 Structure Density (s/mm²): 57.7

Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):18500

Asbestos Type(s):

Tremolite Micrograph Number:

EDXA Spectrum ID:2:17:13PM Amosite Lab No.:6514635

Client No.: 35254-16b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Micrograph Number: **EDXA Spectrum ID:**

Structures < 5 Microns: 3

Structure Concentration (s/cm²): 111000

Chrysotile

Area Sampled (cm²): 100

Location: Bridge-(Forward Port Console)

Asbestos Structures: 14

Structures < 5 Microns: 12

Structures $\geq 5 \mu m$: 2

Structure Density (s/mm²): 135

Structure Concentration (s/cm²): 64800

Page 2 of 12

Asbestos Type(s):

Amosite Chrysotile Filter Type:MCE

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: 22

Structure Density (s/mm²):212

Structure Concentration (s/cm²): 102000

Non-Asbestos Type(s): SiAl - Other Fiber

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Date Received:

5/18/2018

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05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514636

Client No.: 35254-17b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): 100

Location: Bridge-(Forward Middle Console)

Asbestos Structures: 24

Structures < 5 Microns: 21 Structures \geq 5 μ m: 3

Structure Density (s/mm²): 231 Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Amosite Chrysotile

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45 Non-Asbestos Structures: 24

Structure Density (s/mm²):231

Structure Concentration (s/cm²):55500

Non-Asbestos Type(s): SiAl - Other Fiber SiMg - Talc

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: Date Analyzed: 5/18/2018 05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

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Frank E. Ehrenfeld, III

Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Troitin West Birtholimental Group Bu

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514637

Client No.: 35254-18b

Volume Filtered (mL): 0.5 Dilution Factor (mL): 50 Grid Openings: 8

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62

Detection Limit (s/cm²):9250

Area Sampled (cm2): 100

Location: Bridge-(Forward Starboard Console)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²): 962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

fone Detected

Structure Density (s/mm²): <9.62

Structure Concentration (s/cm²): <9250

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514638 Client No.:35254-19b

Volume Filtered (mL):2 Dilution Factor (mL):50 Grid Openings:8

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62 Detection Limit (s/cm²): 2310

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Bridge-(Mid Starboard Console)

Asbestos Structures: 12

Structures ≤ 5 Microns: 11 Structures ≥ 5 μ m: 1

Structure Density (s/mm²): 115 Structure Concentration (s/cm²): 27800

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018 05/23/2018

Date Analyzed:

Signature:

Analyst:

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Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting Project:

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514639

Client No.: 35254-20b

Volume Filtered (mL):3 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):1540

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514640 Client No.: 35254-21b

Volume Filtered (mL):2 Dilution Factor (mL):50 **Grid Openings:8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): 100

Location: MCR-Console

Asbestos Structures: 11

Structures < 5 Microns: 10 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 106

Structure Concentration (s/cm²): 17000

Asbestos Type(s): Chrysotile

Amosite

Area Sampled (cm²): 100

Location: MCR-Top Of Console

Asbestos Structures: 7

Structures < 5 Microns: 6 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 67.3 Structure Concentration (s/cm²): 16200

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<1540

Non-Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: Date Analyzed: 5/18/2018 05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

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201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514641

Client No.: 35254-22b

Volume Filtered (mL): 0.25 Dilution Factor (mL): 50

Grid Openings: 8

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62

Detection Limit (s/cm²): 18500

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514642 Client No.:35254-23b

Volume Filtered (mL):5 Dilution Factor (mL):50 Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm2): 100

Location: MCR-Port Side-Top Of Ducting

Asbestos Structures: 3

Structures < 5 Microns: 3
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 28.8
Structure Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile

Amosite

Area Sampled (cm²): 100

Location: MCR-Port Side-Wireway Adjacent

Switch Console

Asbestos Structures: 7

Structures \leq 5 Microns: 4 Structures \geq 5 μ m: 3

Structure Density (s/mm²): 67.3 Structure Concentration (s/cm²): 6480

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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Victoria BC V8T 2W1

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514643

Client: NOR765

Client No.: 35254-24b

Volume Filtered (mL): 1 Dilution Factor (mL): 50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514644 Client No.:35254-25b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Upper D: Starboard Aft Alleyway-

Deckhead Cavity

Asbestos Structures: 6

Structures ≤ 5 Microns: 5 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 57.7

Structure Concentration (s/cm²): 27800

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm2): 100

Location: Upper D: Stbd Aft Watertight Door-

DH Cavity

Asbestos Structures: 22

Structures < 5 Microns: 16 Structures $\ge 5 \mu m$: 6

Structure Density (s/mm²): 212

Structure Concentration (s/cm²): 204000

Asbestos Type(s):

Chrysotile Amosite Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s):

None Detected

Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the	Preface of this	report for further	information regard	ling your analysis.

Date Received: Date Analyzed: 5/18/2018 05/23/2018

Signature: Analyst:

Allalysi.

Dated: 5/28/2018 4:18:31

Approved By:

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201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514645

Client No.: 35254-26b

Volume Filtered (mL): 0.25 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²): 18500 Area Sampled (cm²): 100

Location: Upper D: Aft Oilers Cabin-Deckhead

Asbestos Structures: 2

Structures < 5 Microns: 2 Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 37000

Filter Type: MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s): None Detected

Asbestos Type(s):

Chrysotile

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514646 Client No.: 35254-27b

Volume Filtered (mL): 1 Dilution Factor (mL):50 **Grid Openings:8** Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):4630

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Poop D: (P-2) Logistics Office-

Deckhead Cavity

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <4630

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s):

None Detected

Please refer to the Preface	of this report for	further information	regarding your	analysis

Date Received:

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Date Analyzed:

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201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514647

Client No.: 35254-28b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Area Sampled (cm²): 100

Location: N. Bridge D: (N-5) Cadet Cabin-

Deckhead Cavity

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures \geq 5 μ m: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514648

Client No.:35254-29b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: N. Bridge D: Bridge-Deckhead Cavity

Asbestos Structures: 7

Structures < 5 Microns: 6 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 67.3

Structure Concentration (s/cm²): 16200

Asbestos Type(s):

Chrysotile Actinolite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

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05/23/2018

Signature: Analyst:

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514649

Client No.: 35254-30b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Area Sampled (cm²):50

Location: M.E.R.-Aft Port (Metal Plate Beneath

Wireway)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): ≤9.62 Structure Concentration (s/cm²): <4630

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514650 Client No.: 35254-31b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Gym-Top Of Electrical Cabinet

Asbestos Structures: 9

Structures < 5 Microns: 9 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 86.5 Structure Concentration (s/cm²): 83300

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Notal West Environmental Group Ex

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514651 Client No.:35254-31

Malana a Elitana d (m. I.)

Volume Filtered (mL):5 Dilution Factor (mL):50 Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Additional Sample Received

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 9.62 Structure Concentration (s/cm²): 925

Asbestos Type(s):
Actinolite

Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <925

Non-Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018 05/23/2018

Date Analyzed:

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Fre Enafel



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Dated: 5/28/2018 4:18:31

Page 12 of 12

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.: 564104 - Lead Paint

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Auxiliary Machine Space Watertight Door

Lab No.: 6514792

Client No.: 35254-10b

Description: Red Paint On Metal

Result (% by Weight): <0.0062

Result (ppm):

Comments:

Lab No.: 6514793 Client No.: 35254-11b

Location:

Description: White Paint On Metal

Result (% by Weight): 0.96

Location:

Main Engine Rm Aft Bulkhead

Result (ppm):

9600 Comments:

Lab No.: 6514794 Client No.: 35254-12b Location:

Description: Black Paint On Metal

Port Windlass

Result (% by Weight): <0.0067

Result (ppm):

Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

Signature: Analyst:

Dated: 5/28/2018 4:18:37

05/21/2018

Approved By:

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd. 201 - 415 Gorge Road East

BC V8T 2W1

Report Date:

Report No.:

564104 - Lead Paint

5/21/2018

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.:

t No.: 35254

Client: NOR765

Victoria

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Paint

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.

Dated: 5/28/2018 4:18:37

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CCGS-NGCC, Bartlett Chief Engineer

From: CCGS-NGCC, Bartlett Captain Sent: May-29-18 10:57 AM

To: McNish Joanne

Cc: ' (ROCSupt@dfo-mpo.gc.ca)'; CCGS-NGCC, Bartlett Chief Engineer

Subject: FW: Bartlett Results

Attachments: image001.png; 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1

V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

Joanne;

Attached is an asbestos results report from wipe samples taken by North West Environmental at the onset of this refit.

Of concern are the elevated and high results in some areas.

We do not have the knowledge or skills to address these levels, so have asked Marine Engineering to invite North West to come down to the ship and advise on mitigation measures.

Is there an Asbestos Advisory Group in Ottawa whose experts can advise on a strategy moving forward?

Chief Engineer Jackson and myself can come up to discuss if you have some time.

Mike

Captain Mike McCullagh
Commanding Officer, CCGS Bartlett
Email: BartlettCO@bar.ccgs-ngcc.gc.ca

Cell: Tellular:

Victoria CG Base Landline: 250.480.2692

Irridium Voice:

Mailing Address: 25 Huron Street Victoria BC V8V 4V9

Government Gouvernement of Canada ou Canada

Canada

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: May-29-18 10:24 AM
To: CCGS-NGCC, Bartlett Captain
Subject: FW: Bartlett Results

Asbestos and lead paint test results from pre-refit sampling arranged by WC.

Matt Jackson Chief Engineer

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CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: May-29-18 10:17 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: Fw: Bartlett Results

Matt,

I'll look over these and we can talk in the afternoon. We can meet with NWE onboard tomorrow if you think we should.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

Sent: Tuesday, May 29, 2018 10:01

To: Chaikin, Gabriel

Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

- 1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
- 2. Moderate range (> 10,000 50,000 s/cm2):
 - a. Bridge mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck stb aft alleyway deckhead cavity
 - e. N bridge deck bridge deckhead cavity
- 3. Elevated range (> 50,000 100,000 s/cm2):
 - a. Bridge fwd/port console
 - b. Bridge Fwd middle console
 - c. MCR port side top of ducting
 - d. Upper deck aft oilers cabin deckhead cavity
 - e. Gym top of electrical cabinet



Asbes tos Testing Laboratories

9000 Commerce Parkway Suite B

Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria V8T 2W1 BC

Report Date: Report No.:

6/13/2018 565818 - TEM Dust

Rev #2, 6/13/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6531792

Client No.: 35254-62b

Client: NOR765

Volume Filtered (mL):7 Dilution Factor (mL):50

Grid Openings:6 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0780 Sensitivity (s/mm²): 12.8

Detection Limit (s/cm²):881

Area Sampled (cm²): 100

Location: Poop Deck-Steward Cabin-Window

Sill

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <12.8 Structure Concentration (s/cm²): <881

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<12.8

Structure Concentration (s/cm²): <881 Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6531793 Client No.: 35254-64b

Volume Filtered (mL): 15

Dilution Factor (mL):50 **Grid Openings:4**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):617

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <617

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (um): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Tate Analyzed:

06/13/2018

Signature: Analyst:

Dated: 6/13/2018 4:59:58

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 2 of 5



Assessos Testing Laboratories

9000 Commerce Parkway Suite B

Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565818 - TEM Dust Rev #2, 6/13/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6531796 Client No.: 35254-70b

Volume Filtered (mL):7 Dilution Factor (mL):50 Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):NA

EDXA Spectrum ID:

Area Sampled (cm²):Blank Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s): None Detected

Micrograph Number:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received: Date Analyzed: 6/12/2018 06/13/2018

Signature: Analyst:

Dated: 6/13/2018 4:59:59

Approved By:



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1 Report Date: 6/13/2018

Report No.: 565817 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6531787

Client: NOR765

Location: Upper D: Crew Cabin U-36 (Aft Port) Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Client No.: 35254-72b

-TV Shelf Area (cm2): 100

Density (s/mm²): <19.2

Lab No.:6531788

Location: Upper D: 3rd Engineer Cabin U-27

Concentration (s/cm²): <881 Asbestos Type(s): None Detected

Client No.: 35254-74b

Behind Monitor Area (cm2): 100

Density (s/mm²): <11.0

Lab No.: 6531789 Client No.: 35254-76b

Location: Field Blank Area (cm²): 100 Density (s/mm²): <12.8

Concentration (s/cm²): <881 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Date Analyzed:

06/13/2018

≾ignature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/13/2018 5:06:41

Page 1 of 3



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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/13/2018

Report No.: 565817 - TEM Dust Wipe

Project: CCC

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

740Z.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



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Telephone: 856-231-9449
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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 6/13/2018

Report No.: 565817 - TEM Dust

Wipe

Project: CC

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6531789 Client No.:35254-76b

Client: NOR765

Volume Filtered (mL):7 Dilution Factor (mL):50 Grid Openings:6 Opening Area (mm²):0.0

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0780 Sensitivity (s/mm²): 12.8 Detection Limit (s/cm²): 881

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100 Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <12.8 Structure Concentration (s/cm²): <881

Asbestos Type(s):
None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<12.8 Structure Concentration (s/cm²):<881 Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/12/2018

Date Analyzed:

ed: __06/13/2018

ঠignature: Analyst: 00/13/2018

Approved By:

Frak Franks

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/13/2018 5:06:42

Page 2 of 3

NAHONAL

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Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.:

565543 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Location: Gym-Top Of Electrical Cabinet

Lab No.:6529001

Client No.: 35254-47b

Volume Filtered (mL): 15 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):617

Asbestos Structures: 2

Area Sampled (cm²):100

Structures < 5 Microns: 2 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 38.5 Structure Concentration (s/cm²): 1230

Asbestos Type(s):

Chrysotile

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: 2

Structure Density (s/mm²):38.5 Structure Concentration (s/cm²):1230

Non-Asbestos Type(s):

SiMg - Talc SiAl - Other Fiber

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6529002 Client No.: 35254-48b

Volume Filtered (mL):20 Dilution Factor (mL):50 **Grid Openings:4** Opening Area (mm²):0.013

Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):463

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100 Location: Gym-Top Of Light

Asbestos Structures: 6

Structures < 5 Microns: 6 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 115 Structure Concentration (s/cm²): 2780

Asbestos Type(s): Chrysotile

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm):0.45 Non-Asbestos Structures: 3

Structure Density (s/mm²):57.7 Structure Concentration (s/cm²): 1390

Non-Asbestos Type(s):

SiMg - Talc SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

Signature:

Analyst:

06/08/2018

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/11/2018 10:21:27

Page 1 of 7



TERNATIONAL Neuroles Too MC I APON ALOBOUS 9000 Commerce Parkway Suite B

Telephone: 856-231-9449 Email: customerservice@iatl.com

Mt. Laurel, New Jersey 08054

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529004 Client No.: 35254-50b

Volume Filtered (mL):4

Dilution Factor (mL):50 **Grid Openings:8**

Micrograph Number: **EDXA Spectrum ID:** Lab No.:6529005

Client No.: 35254-51b

Volume Filtered (mL):2

Dilution Factor (mL):50 **Grid Openings:8**

Sensitivity (s/mm²):9.62

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104

Detection Limit (s/cm²):2310

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):1160

Chrysotile

Area Sampled (cm²):100

Location: Winch Room-Top Of Stbd Aft Shelf

Asbestos Structures: 11

Structures < 5 Microns: 11 Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 106 Structure Concentration (s/cm²): 12700

Asbestos Type(s):

Area Sampled (cm²):100

Location: Boson Stores-Top Of Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <2310

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<1160

Non-Asbestos Type(s):

None Detected

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature:

Analyst:

Dated: 6/11/2018 10:21:28

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Page 3 of 7



Informacce Parkway Suite Bin vertu

de la LoiMt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529008

Client No.: 35254-54b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):925

Chrysotile

Area Sampled (cm²): 100

Location: Cargo Hold-Forward Stbd Cable

Shield Plate

Asbestos Structures: 4

Structures < 5 Microns: 4 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 38.5 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

Filter Type: MCE

Filter Size (mm²):962

Pore Size (µm):0.45

None Detected

Filter Type: MCE

Filter Size (mm²):962

Pore Size (µm): 0.45

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6529009

Client No.: 35254-55b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Cargo Hold-Aft Port Yellow Lockout

Box

Asbestos Structures: 4

Structures < 5 Microns: 3 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 38.5

Structure Concentration (s/cm²): 9250

Asbestos Type(s): Chrysotile

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Structures: None Detected

Non-Asbestos Structures: None Detected

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature:

Analyst:

Dated: 6/11/2018 10:21:28

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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de la 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6529010

Client No.: 35254-56b

Volume Filtered (mL): 10 Dilution Factor (mL): 50 Grid Openings: 4

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 925

Micrograph Number: EDXA Spectrum ID:

Lab No.: 6529011 Client No.: 35254-57b

Volume Filtered (mL): 10 Dilution Factor (mL): 50 Grid Openings: 4 Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Cargo Hold-Aft Stbd Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <925

Asbestos Type(s):
None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Area Sampled (cm²):Blank
Location:Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤19.2 Structure Concentration (s/cm²): NA

Asbestos Type(s):
None Detected

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please	refer to	the Pr	reface o	fthic	report for	r firther	informati	on regarding your	analyeic
ricase	reterio	uie ei	elace o	LHUS	renon in	r woner	muorman	on regarding voils	SISVIKINK

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature:

Analyst:

Approved By:

Fre Enough

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/11/2018 10:21:28

Page 6 of 7

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 11, 2018

Client Job or PO#: F1782-180965 Project number: 35254

Overloaded with Welding Dust Overloaded with Welding Overloaded with Welding Comment Dust Dust 007 N/A N/A Ν V ٧ **^^** N/A N/ N/A ≷ ≷ ≥ ≥ <0.01 <0.01 <0.01 <0.01 Density Concen. (fib/mm2) (fib/mL) N/A N/A <0.01 <0.01 N/A <0.01 N/A 5.73 8.92 N/A 3.18 2,55 5.10 0.00 N/A 7.01 Volume 0 1098,62 1082.32 1950 1953,25 1956,96 949 818.26 130 Ξ 1982,08 100 100 100 100 100 100 100 100 100 100 # Fields # Fibres 5,5 4.5 7.0 4.0 2.5 0.0 2.0 ರ 2 Б Time (Mins) 601 604 809 009 292 337 332 251 6 0 18:12 18:20 18:42 Time O∓ 18:07 18:29 18:36 00:00 13:33 13:34 14:31 08:16 08:11 08:21 07:56 08:07 13:44 14:31 00:00 Time On 08:02 13:51 Avg. Flow Rate (lpm) 3.25 3.25 3.24 3,26 3.25 3.26 3.26 3.26 3.25 0 Analyst 器 Ж Ж Ж Ж æ Ж BR Ж BR. Type* AMB AMB AMB AMB AMB AMB AMB AMB AMB 8 35254-10a | May-31-2018 | Jun-01-2018 | (QC) Field Blank May-31-2018 Jun-01-2018 (AMB) Aft Oilers 35254-4a | May-31-2018 | Jun-01-2018 | (AMB) Lounge (AMB) MCR 1 May-31-2018 Jun-01-2018 (AMB) Bridge May-31-2018 Jun-01-2018 (AMB) AMS 3 (AMB) AMS 1 35254-7a | May-31-2018 | Jun-01-2018 | (AMB) MCR 2 Area May-31-2018 | Jun-01-2018 | (AMB) AMS 2 35254-6a | May-31-2018 | Jun-01-2018 | (AMB) Gym May-31-2018 Jun-01-2018 May-31-2018 Jun-01-2018 Date Analysed Date Collected 35254-5a 35254-3a 35254-9a 35254-1a 35254-8a Sample No 35254-2a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS PAT

LAB# 202314

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Comment	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										/ Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
700	~	٧		٧		٧	٧	٧		٧	٧		٧		٧	~
۸ / ۸	3	>		>		>	>	>		>	3		>		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	00.00	8.92	7.64	12.10	3.18	9,55	5.10	00.00	6.37	1.91	7.01	15.29
Volume (L)	62,64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133,11	0	942.48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	6.0	5'6	2.5	7.5	4.0	0.0	5.0	1,5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time G#	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2.61	0	2.92	0	2.92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Analyst	OC	QΓ	Ωſ	BR	BR	BR	BR	BR	BR	OC	Οſ	Ωſ	JD	Qſ	Ωſ	Οť
Type*	2200	AMB	δC	AMB	ည	AMB	AC	AC	သု	AMB	220	သု	AMB	оč	AMB	AC
Area	35254-11a Jun-05-2018 Jun-06-2018 (OCC) Occupational	(AMB) Cargo Hold Adj. Gym Entrance	(QC) Field Blank	(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational	(QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	Jun-05-2018	Jun-05-2018	Jun-05-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	35254-21a Jun-07-2018 Jun-08-2018	Jun-07-2018 Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-09-2018	Jun-09-2018
Sample	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

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Concen. v (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	3,82	5,10	3.82	5,10	15.92	17.20	22,93	22.29	0.00	00.0
Volume (L)	657.3	733.2	2612.74	2558.64	2597,28	2543.41	2512.95	2497.72	0	c
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	3,0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0
Time (Mins)	313	312	169	168	168	167	165	164	0	U
Time Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00
Time On	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00
Avg. Flow Rate (Ipm)	2.1	2.35	15.46	15.23	15.46	15,23	15.23	15.23	0	0
Analyst	G.	8	OC.	OC	Дſ	ЭD	Оſ	ЭD	JD	OL
Type*	АМВ	AMB	AC	AC	AC	AC	AC	AC	AC	J
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	35254-28a Jun-10-2018 Jun-11-2018 Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	35254-36a Jun-10-2018 Jun-11-2018 (OC) Field Blank
Date Analysed	35254-27a Jun-10-2018 Jun-11-2018 Alleyway Adj. Hospita	Jun-11-2018	Jun-10-2018 Jun-11-2018	Jun-11-2018	Jun-10-2018 Jun-11-2018	35254-32a Jun-10-2018 Jun-11-2018	35254-33a Jun-10-2018 Jun-11-2018	35254-34a Jun-10-2018 Jun-11-2018	Jun-10-2018 Jun-11-2018	1 Jun-11-2018
Date Collected	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018
Sample No	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a

PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

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LAB# 202314

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*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0,02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable,

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml. (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL.)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)



As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

LAB# 202314

de la 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

BC V8T 2W1

Victoria

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529001 Client No.: 35254-47b Location: Gym-Top Of Electrical Cabinet

Area (cm2): 100

Density (s/mm²): 38.5

Concentration (s/cm²): 1230

Asbestos Type(s): Chrysotile

Lab No.:6529002 Client No.: 35254-48b Location: Gym-Top Of Light

Area (cm²): 100 Density (s/mm²): 115 Concentration (s/cm²): 2780 Asbestos Type(s): Chrysotile

Lab No.:6529003 Client No.: 35254-49b Location: Winch Room-Top Of Aft Heater

Area (cm2): 100 Density (s/mm²): 106 Concentration (s/cm²): 25400 Asbestos Type(s): Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

Dated: 6/11/2018 10:21:27

06/08/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

de la 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com



CERTIFICATE OF ANALY

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report No.:

565543 - TEM Dust

6/8/2018

Project:

Report Date:

CCGS Bartlett-General Hazmat Consulting

Project No.:

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529004

Client: NOR765

Client No.: 35254-50b

Location: Winch Room-Top Of Stbd Aft Shelf

Area (cm2): 100

Density (s/mm²): 106

Concentration (s/cm²): 12700

Asbestos Type(s): Chrysotile

Lab No.:6529005

Client No.: 35254-51b

Location: Boson Stores-Top Of Electrical Box

Area (cm²): 100

Density (s/mm²): <9.62

Concentration (s/cm²): <2310

Asbestos Type(s): None Detected

Lab No.:6529006

Client No.: 35254-52b

Location: Boson Stores-Top Of Unused Cable

Tray

Area (cm2): 100 Density (s/mm²): 9.62 Concentration (s/cm²): 2310

Asbestos Type(s): Chrysotile

Lab No.:6529007

Client No.: 35254-53b

Location: Cargo Hold-Forward Port Shelf

Area (cm2): 100

Density (s/mm²): <76.9

Concentration (s/cm²): <1850 Asbestos Type(s): None Detected

Lab No.:6529008

Client No.: 35254-54b

Location: Cargo Hold-Forward Stbd Cable

Shield Plate Area (cm2): 100

Density (s/mm²): 38.5

Lab No.:6529009

Client No.: 35254-55b

Location: Cargo Hold-Aft Port Yellow Lockout Concentration (s/cm²): 9250

Box

Area (cm2): 100

Density (s/mm²): 38.5

Lab No.:6529010 Client No.: 35254-56b Location: Cargo Hold-Aft Stbd Electrical Box

Area (cm2): 100

Density (s/mm²): <19.2

Asbestos Type(s): Chrysotile

Concentration (s/cm²): 3700

Asbestos Type(s): Chrysotile

Concentration (s/cm²): <925 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

Date Analyzed:

6/8/2018

06/08/2018

Signature: Analyst:

Dated: 6/11/2018 10:21:27

Approved By:

- R France Frank E. Ehrenfeld, III

Laboratory Director

de la 19000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

LAZOITAZ

201 - 415 Gorge Road East

Victoria BC V8T 2W1

ASD STOS TESTING LABOR CLUBS

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6529011 Client No.: 35254-57b

Location: Field Blank Area (cm²): Blank Density (s/mm²): <19.2 Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/11/2018 10:21:27

Page 3 of 5

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Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.:

565543 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- (1)Note: Sample not analyzed.
- (2)Note: Sample not analyzed at request of client.
- (3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.
- (4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.
- (5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763

Dated: 6/11/2018 10:21:27

Page 4 of 5



de la 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054

Telephone: 856-231-9449 Email: customerservice@iatl.com



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

6/8/2018 Report Date:

Report No.: 565543 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.:

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity > 1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13) Note: Method analytical sensitivity of < 0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

CCGS-NGCC, Bartlett Chief Officer

From: CCGS-NGCC, Bartlett Captain

Sent: May-29-18 2:12 PM

To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Chief Officer

Subject: FW: Bartlett Results

Attachments: 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0

2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]

Sent: May-29-18 2:07 PM

To: Ormiston Glenn; Jersch Russell; Bennett Bob; Wright Edward; Chaikin Gabriel; McNish Joanne; CCGS-NGCC, Bartlett

Captain

Cc: Carrigan Kevin

Subject: FW: Bartlett Results

FYI, my note to Director of CGSS in HQ.

Bob

From: Ayres, Bob

Sent: May-29-18 1:45 PM **To:** Richardson, Dena

Subject: FW: Bartlett Results

Hi Dena,

Just wanting to give you a heads up on the most recent development with the Bartlett and asbestos. FYI, the acting RD Fleet was also planning to notify HQ (DG Ops and perhaps others).

A note of history – the ship was built in 1969 and no doubt had extensive asbestos containing materials (ACM) used in her construction. Asbestos surveys over the years and abatement/remediation efforts have confirmed this.

Asbestos concerns were raised in early 2018 and documented on a series of IIRs, with a focus area being wiring in the bridge consoles that had not previously been identified as ACM. The ship is two weeks into a refit at Vic Base (with those bridge consoles being among the work) and additional tests were ordered a week ago with results back today.

As you will see by the email below there were both bulks samples and wipe tests. While the analysis of bulk samples came back as negative the dust wipe samples from a variety of locations came back as positive for ACM to varying degrees.

- The bulk tests were done on brake bands, insulations and gaskets and all came back as none detected.
- The wipe tests were done in a variety of wire-ways, deck-heads, cavities, and consoles and results ranged from none detected to high concentrations (as per below)

Shortly after this recent result became known the ME personnel notified the ship, myself and Fleet Management. We met and discussed actions, which included;

- the stop of any work with potential to disturb ACM 9this includes refit work with contractors)
- ME has arranged for environmental specialist consultants to attend the ship tomorrow for further review, assessment and determination of a way forward

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• The Bartlett CO, acting RD Fleet and myself met with all Bartlett crew immediately following the meeting to present the news to crew and take any questions – there were some questions but the crew appeared to take it in stride, with the understanding that we should know more tomorrow and in the days following.

Important to note is that air tests were conducted throughout the ship, including underway, after the findings earlier this year and all came back as negative.

There is supposition that the dust sampled in this most recent testing has been present since the time of earlier remediation efforts (perhaps going back decades). I feel this is probable but it is also important to note that some dust with ACM was identified in previously cleaned spaces.

I am assuming you may hear of this so wanted to make sure you were aware. I'll keep you advised.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

From: Chaikin, Gabriel Sent: May-29-18 12:47 PM

To: Ayres, Bob

Subject: FW: Bartlett Results

Bob,

Here are the sample results for the Bartlett. There is quite a bit to unpack here. The summary below is a good start. Note the usual blanket statements and the beginning and the end.

Overall this is not good news. Our hope is that the majority of the findings are very old and have not posed a risk to the crew. The previous air sample results would support that hope as they were all negative for ACM. Of course some of the areas were these sample wipes were taken, were cleaned during the last refit. This shows that indeed there is a lack of encapsulation.

Our next plan will be air sampling throughout the vessel, followed by cleaning, encapsulation and remediation.

Regards,

Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

From

Sent: 2018-May-29 9:46 AM

To: Chaikin, Gabriel

Cc:

Subject: RE: Bartlett Results

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Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

- 1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
- 2. Moderate range (> 10,000 50,000 s/cm2):
 - a. Bridge mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck stb aft alleyway deckhead cavity
 - e. N bridge deck bridge deckhead cavity
- 3. Elevated range (> 50,000 100,000 s/cm2):
 - a. Bridge fwd/port console
 - b. Bridge Fwd middle console
 - c. MCR port side top of ducting
 - d. Upper deck aft oilers cabin deckhead cavity
 - e. Gym top of electrical cabinet
- 4. High range (> 100,000 s/cm2):
 - a. Bridge fire panel console (mid port console)
 - b. AMS wireway above sewage tank
 - c. MER wireway adj. escape hatch
 - d. Upper deck stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting lead-containing paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



Project Manager
North West Environmental Group Ltd.

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From:

Sent: May 29, 2018 8:43 AM

To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>;

Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.

Thanks for your patience,



Project Manager North West Environmental Group Ltd. C. 250-580-1473 (Primary)

From: Chaikin, Gabriel < Gabriel. Chaikin@dfo-mpo.gc.ca>

Sent: May 29, 2018 8:15 AM

To:

Subject: Bartlett Results

Good day and ,

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.

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Ryan, Sam

From:

Richardson, Dena

Sent:

Friday, June 1, 2018 3:18 PM

To:

Ryan, Sam; Lick, Gregory Pelletier, Mario; Ivany, Gary

Cc: Subject:

FW: Bartlett ACM meeting

Good Afternoon,

The below is a summary of the Asbestos Containing Materials (ACM) meeting that took place on the Bartlett yesterday. The majority of the refit work has been halted as remediation efforts take place. The crews have been actively involved in the discussions with CCG as well as Health Canada and BC Safe. workplace. Further assessment will be carried out and I will keep you informed of how this progresses.

Thank you, Dena

From: Ayres, Bob

Sent: Thursday, May 31, 2018 7:58 PM

To: McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>; Ormiston, Glenn <Glenn.Ormiston@dfo-mpo.gc.ca>; Hunt, Cliff <Cliff.Hunt@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca) <BartlettCO@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Chief Engineer (BartlettCE@ccgs-ngcc.gc.ca) <BartlettCE@ccgs-ngcc.gc.ca>; Western ROC Superintendent \ Surintendant ROC Ouest (DFO/MPO) <Western.Ops-Centre@dfo-mpo.gc.ca>; Jersch, Russell <Russell.Jersch@dfo-mpo.gc.ca>; Thirkell, Darcene <Darcene.Thirkell@dfo-mpo.gc.ca>; Granger, Louise Anne <LouiseAnne.Granger@dfo-mpo.gc.ca>; Readman, Tristan <Tristan.Readman@dfo-mpo.gc.ca>; Wright, Edward <Edward.Wright@DFO-MPO.GC.CA>; Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>

Cc: Carrigan, Kevin < Kevin.Carrigan@dfo-mpo.gc.ca>; Richardson, Dena < Dena.Richardson@dfo-mpo.gc.ca> **Subject:** RE: Bartlett ACM meeting

Hello all,

The following are notes are prepared by VMM Gabe Chaikin and myself to summarize the meeting on board Bartlett this morning regarding recent asbestos developments on ship.

CCGS Bartlett is currently undergoing refit alongside at Victoria Base. The ship is known to have asbestos containing materials (ACM) and has a history of asbestos surveys and remediation efforts. Recent findings of ACM in bridge consoles in February 2018 lead to planned remediation / mitigation work for this refit. Additional tests both bulk sample and dust wipe were conducted last week by NW Environmental with results returned on May 29th indicating negative on the bulk samples but positive for ACM in many of the areas subject to dust wipe tests. These findings were discussed that day with the immediate decision to stop all work with potential to disturb ACM and a briefing was delivered by Commanding Officer to all crew. CCG ME arranged for this meeting to consider next steps.

Meeting convened on CCGS Bartlett at 0900 with representatives from the following;

- CCG ITS Marine Engineering (ME), Vessel Maintenance Manager (VMM)
- CCGS Bartlett Engineering Department Chief and Senior
- CCG Safety and Security, Manager
- Public Works Contracting Officer
- Canadian Maritime Engineering (CME) Primary Contractor
- Emery Electric Limited subcontracted by CME for electrical work
- Northwest Environmental Group asbestos consultants

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• Quantum Murray Environmental – remediation company

Discussed at the outset of meeting were the recent history of asbestos findings on Bartlett and a variety of considerations for safety of personnel both CCG and contractor, the need for further assessment and testing to identify options for some or all of cleaning, removal, encapsulation and other mitigations as appropriate. Probable refit delay and program impacts were also noted.

Regarding the dust samples it was noted by the environmental consultant that ACM in dust samples do not necessarily correlate to air samples and that air samples taken, including in recent months have returned as negative for asbestos. While many of the dust wipes were taken in difficult to access areas (wire-ways, deck-heads) and may be very old residual materials (these were also noted as being waxy in nature), some of the positive samples come from more recently cleaned areas and indicate that dusts may have migrated and thus are more concerning.

A tour of the ship was undertaken to provide CCG personnel and contractors with a view of the known or suspected areas of concern.

- The Engineering and Electrical contractors were understanding of the situation and offered their expertise to assist where necessary (e.g. Emery Electric with cleaning behind panels in MCR).
- All contractors have been informed and work stopped. Expectation is that Emery and Finning work with the SSG may need to be paused for three weeks. Some CME work off ship can likely continue.
- Northwest Environmental was to commence with additional air sampling, and wipe tests in some previously untested areas including the hold, cabins on each deck plus additional testing above the deck-heads.
- Quantum Murray is to provide estimates later today or tomorrow to ME with options including price and time
 estimates. VMM has estimated based on discussion to this point that the cleaning may be \$120-\$150 K if we do
 not lower deck-heads. Additional contract costs are not known but VMM suggests these may be significant.
- The majority of crew work on board has been halted, though deck crew work on derrick is continuing.
 Disposition of crew during the probable cleaning is not yet known, including whether they can (some or all) remain on board.
- Previously planned work to remediate the bridge consoles and move fire panel is expected to continue concurrent with these new developments.
- VMM estimates the need for an additional four weeks alongside. This estimate of course is preliminary.

The risk of exposure to personnel was also discussed and this could be considered in three groupings, those prior, during and after the expected remediation.

- Those prior could be considered to include; any persons who have crewed on the ship with the greatest potential risk being those with the longest term exposure to the areas of concern, presumably engineering or others whose work has required entry into the less accessible areas of the ship, with confirmed or probable ACM; E&I technicians or ME personnel who have worked in the consoles or other tight spaces; contractors who may have worked in these areas.
- Control of risk of exposure during the expected remediation is indicated in the notes above.
- The need for control of risk after the work is completed was also discussed and includes the probable need for additional administrative controls such as training and the development of work instructions which may include specific off limit areas and PPE requirements.
- The following is based on recent discussion with Dr. Krawciw of Health Canada. Given the delayed nature of health effects from asbestos exposure, it is important for those who may have higher risk exposure to document these potential exposures in case of future need for claims. Consideration should be given to filing an "information only claim" with Worksafe BC to ensure it's on the record. Dr. Krawciw also recommended that in such a case these would also be sent to his unit (HC Occupational and Environmental Health to be place on file for the individuals. Finally, individuals may wish to follow-up with their personal physician to discuss based on their own personal risk factors.
- I would be hopeful that the risk of exposure is indeed low, even for those employees who may have worked most closely with these materials.

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We will know more as these additional assessments and clean-up work is conducted.

Regards, Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

From: Ayres, Bob

Sent: May-30-18 1:41 PM **To:** Chaikin, Gabriel

Subject: RE: Bartlett ACM meeting

Thanks Gabe. I will plan to attend.

Bob

From: Chaikin, Gabriel Sent: May-30-18 12:52 PM

To: Ayres, Bob

Subject: Bartlett ACM meeting

Hi Bob,

There is a meeting planned for tomorrow morning 9am.

We will start at the CME workshop on the jetty and then do a walk around the vessel. North West Environmental will be there. Quamtum also which is an established long time local remediation company. They were the once choosen by CME to be thier subcontractor for this work.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

McNish, Joanne

From:

Ormiston, Glenn on behalf of McNish, Joanne

Sent:

Friday, June 1, 2018 3:31 PM

To: Cc: McNish, Joanne

Cc: Subject: Carrigan, Kevin FW: Bartlett Crew

Joanne

Further to what is mentioned below.

- Spoke to Gabe Chaikin re removal of crew Monday evening. At this point it is a consideration. I requested that clarification as to funding to house crew during this period. Is this emergency refit funding? Once all factors are known then we can make more informed decision i.e., duration of work, refit priorities, ongoing work that crew can proceed with, leave considerations, availability of accommodation, type of accommodations, meal consideration etc.
- Carrigan, Ayres, Jersch, Bennet all advise of the current situation.
- Bartlett crew to do a refit work, leave and options assessment over the weekend.
- Crew only leaving the vessel due to the ability to double shift the remediation crew recommendation if accepted. First is a recommendation to escalate the cleaning process not an asbestos hazard.
- ROC looking at crewing support options within the operational fleet.
- More detail needs to tickle in before we crave out a plan of attack. Engineering Support and Bartlett Crew will
 up-date over the weekend when new information becomes available
- Situation on board is still stable.

Glenn

From: Jersch, Russell

Sent: Friday, June 1, 2018 2:36 PM

To: Ormiston, Glenn <Glenn.Ormiston@dfo-mpo.gc.ca>; McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>

Cc: Granger, Louise Anne <LouiseAnne.Granger@dfo-mpo.gc.ca>

Subject: FW: Bartlett Crew

FYSA, the message received from the Maintenance Manager indicates that we should evacuate the vessel starting Monday evening to allow the contractors better access to the vessel.

Glenn and I will meet with the vessels management to discuss options and to just put a plan together if the need arises.

Russell

From: Chaikin, Gabriel Sent: June-01-18 1:34 PM

To: Jersch, Russell **Subject:** Bartlett Crew

Russell,

We are still waiting to hear back from the remediation company. We have asked for options in relation to double shifts with full access to the vessel as opposed to single shifts in specified areas with the crew remaining onboard. I believe we will find it advantageous to remove the crew from Monday evening onward. If the engineers could remain behind to

inventory type 2 and maintain a night watch that will be beneficial. We could also retain a set of deckhands or officers to continue with their tackle work and to make up the confined space rescue team if required.

Please call me if you would like to discuss. I hope to have a plan in place between CME and public works by late afternoon and confirmation of the plan by Monday. With any luck the team can be setting up on Monday ready to start work on Tuesday.

Regards,

Gabriel Chaikin

Senior Vessel Maintenance Manager, CCG/ITS/Marine Engineering Fisheries and Oceans Canada / Government of Canada gabriel.chaikin@dfo-mpo.gc.ca / Tel: 250-363-0228

Gestionnaire principal de l'entretien des navires, GCC/STI/Ingénierie navale Pêches et Océans Canada / Gouvernement du Canada gabriel.chaikin@dfo-mpo.gc.ca / Tél. : 250-363-0228

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Ayres, Bob

From:

Ayres, Bob

Sent:

Monday, June 4, 2018 2:36 PM

To:

Chaikin, Gabriel

Subject:

RE: Bartlett ACM meeting

Thanks Gabe,

Good suggestion - I'll check in with E&I regarding their group documentation strategy.

Bob

From: Chaikin, Gabriel Sent: June-01-18 1:28 PM

To: Ayres, Bob

Subject: RE: Bartlett ACM meeting

Hi Bob,

Nice write up. Thank you very much for doing this.

One thing we may want to offer is a roadmap for the crew to follow to document their particular cases in regards to these findings. I believe E+I is moving ahead with group documentation.

Regards,

Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

From: Ayres, Bob

Sent: 2018–May-31 4:58 PM

To: McNish, Joanne; Ormiston, Glenn; Hunt, Cliff; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca); CCGS-NGCC, Bartlett Chief Engineer (BartlettCE@ccgs-ngcc.gc.ca); Western ROC Superintendent \ Surintendant ROC Ouest (DFO/MPO); Jersch, Russell; Thirkell, Darcene; Granger, Louise Anne; Readman, Tristan; Wright, Edward; Chaikin,

Gabriel

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Bob Ayres

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Project ID:

Attention:

North West Environmental Group 201-415 Gorge Road East Victoria, BC V8T 2W1

Phone: (250) 384-9695

Fax: (250) 384-9865

Received Date: 06/04/2018 9:31 AM **Analysis Date:** 06/05/2018 - 06/06/2018

Collected Date: 05/31/2018

Project: 35254/CCGS Bartlett - General Hazmat Consulting

Test Report: Asbestos Analysis of Dust Samples Using Method ASTM 6480

Sample ID	Area Sampled (cm²)	Asbestos Type	Asbestos Structures	Sensitivity (str/cm²)	Concentration (str/cm²)	Comments
35254-32b Winch Room - Top of Heater 551806441-0001	100	None Detected	<2.99	49200	<147000	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-33b Winch Room - Starboard Top Shelf 551806441-0002	100	None Detected	<2.99	1640	<4900	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-34b Bosons Stores - Top of Electrical Panel 551806441-0003	100	None Detected	<2.99	49200	<147000	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-35b Bosons 6tores - Top of P.A. ox 551806441-0004	100	None Detected	<2.99	4920	<14700	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-36b Cargo Hold (Pt Forward)-Top of Speaker 551806441-0005	100	None Detected	<2.99	1640	<4900	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-37b Cargo Hold (Aft) - Top Shelf 551806441-0006	100	None Detected	<2.99	49200	<147000	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-38b Cargo Hold (Aft) - Deckhead Stantion 551806441-0007	100	None Detected	<2.99	49200	<147000	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-39b U Deck-Aft Oilers Cab T of Mini-fridge 551806441-0008	100	None Detected	<2.99	1640	<4900	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-40b Upper Deck - First Aid - Top of Locker	100	Chrysotile	4	2150	8600	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.

EMSL maintains liability to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Mississauga, ON

Initial report from: 06/06/2018 14:03:33



de la Loi sur l'accès à l'information



EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3 Phone/Fax: (289) 997-4602 / (289) 997-4607 http://www.EMSL.com/torontolab@emsl.com EMSL Canada Order: 551806441

Customer ID: 55PAEC50

Customer PO: F1782-180965

Project ID:

Attention:

North West Environmental Group 201-415 Gorge Road East

Victoria, BC V8T 2W1

Phone: (250) 384-9695

Fax: (250) 384-9865

Received Date: 06/04/2018 9:31 AM Analysis Date: 06/05/2018 - 06/06/2018

Collected Date: 05/31/2018

Project: 35254/CCGS Bartlett - General Hazmat Consulting

Test Report: Asbestos Analysis of Dust Samples Using Method ASTM 6480

Sample ID	Area Sampled (cm²)	Asbestos Type	Asbestos Structures	Sensitivity (str/cm²)	Concentration (str/cm²)	Comments
551806441-0009						
35254-41b Poop Deck-Steward Cab. (P-12) -TV Shelf 551806441-0010	100	None Detected	<2.99	2150	<6430	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-42b Poop Deck-3RD Officer-Top of Mini-fridge 551806441-0011	100	Chrysotile	<2.99	5370	<16100	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-43b Boat Deck - Chief Engineer -Top of Shelf 51806441-0012	100	None Detected	<2.99	5370	<16100	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-44b Boat Deck-Com. Officer-Top of UPS U 551806441-0013	100	None Detected	<2.99	5370	<16100	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-45b Stack- Top of Port Supply Air Plenum 551806441-0014	100	Chrysotile	97	53700	5210000	Due to excessive particulate the target analytical sensitivity of 260 str/cm² was not reached.
35254-46b Field Blank 551806441-0015		None Detected	<2.99			Blank

EMSL maintains liability to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Canada Inc. Mississauga, ON

Initial report from: 06/06/2018 14:03:33

s.19(1)

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le la Loi sur l'accès à l'information EMSL Canada Order: 551806441

EMSL Canada Inc. 2756 Slough Street Mississauga, ON L4T 1G3 Phone/Fax: (289) 997-4602 / (289) 997-4607 L Canada Order: 551806441 Customer ID: 55PAEC50 Customer PO: F1782-180965

Project ID:

Attention: Shaun Craveiro

North West Environmental Group 201-415 Gorge Road East Victoria, BC V8T 2W1

http://www.EMSL.com / torontolab@emsl.com

Phone: (250) 384-9695 Fax: (250) 384-9865

Received Date: 06/04/2018 9:31 AM
Analysis Date: 06/05/2018 - 06/06/2018

Collected Date: 05/31/2018

Project: 35254/CCGS Bartlett - General Hazmat Consulting

Test Report: Asbestos Analysis of Dust Samples Using Method ASTM 6480

Analyst(s):	

EMSL maintains liability to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted

Samples analyzed by EMSŁ Canada Inc. Mississauga, ON

Initial report from: 06/06/2018 14:03:33

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CCGS-NGCC, Bartle	ett Chief Officer
From:	CCGS-NGCC, Bartlett Captain
Sent:	June-06-18 4:49 PM
To:	McNish Joanne
Cc:	Jersch Russell; Ayres Bob; ' (ROCSupt@dfo-mpo.gc.ca)'; CCGS-NGCC, Bartlett Chief
	Engineer; CCGS-NGCC, Bartlett Chief Officer
Subject:	FW: Bartlett Wipe Results
Attachments:	551806441_003.pdf
Joanne;	
As expected small amo	e test results that were conducted last week prior to clean-up commencing. unts detected in sick bay, 3rd Officer cabin. Small amounts likely tracked into the cabins on urse of normal work. These will be mitigated during the final cabin wipe down.
_	ed in the stack flats. 5 million str/cm2. Ely left after the old exhaust lagging was removed and replaced with non-asbestos materials.
Bob's and Russell,	
•	g between Marine Engineering, abatement contractor, and consultant on board Bartlett
tomorrow to discuss a	
You are more than wel	come to attend. We will advise of timing.
Mike	
Captain Mike McCullag	gh
Commanding Officer, (CCGS Bartlett
Email: BartlettCO@ba	r.ccgs-ngcc.gc.ca
Cell:	
Tellular:	no. 250 490 2602
Victoria CG Base Landli Irridium Voice:	ne: 250.480.2692
Irridium Data:	
	ATT

Mailing Address:

25 Huron Street Victoria BC V8V 4V9

Government Gouvernment of Canada du Canada

Canadã

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: June-06-18 4:16 PM **To:** CCGS-NGCC, Bartlett Captain Subject: FW: Bartlett Wipe Results

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Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From:

Sent: June-06-18 4:08 PM To: Chaikin Gabriel

Cc:

CCGS-NGCC, Bartlett Chief Engineer

Subject: Bartlett Wipe Results

Good afternoon, please find attached the wipe results from last week's sampling. Comments:

- 1. We will redo testing in the forward compartments to confirm that asbestos is not present. These samples did not meet the sensitivity of the analytical method and there is the potential that asbestos fibres might be present.
- 2. Asbestos was found in dust in the First Aid Room and 3rd Mate's cabin. Suggest a clean of all cabins and that all linens be washed at a facility set up to launder asbestos-contaminated linens.
- 3. High level of asbestos fibres in the stack. Fully cleaning this space will likely cause significant impacts to the schedule and budget. Suggest a bulk-out removal of gross contamination. Workers entering the stack will have to follow asbestos protocols. Air testing in the Engine room below have not indicated any exceedences. Please let me know if you have any questions or concerns. Best,

Project Manager North West Environmental Group Ltd. 250-580-1473

Ayres, Bob

rtyres, Bob	
From:	
Sent:	Thursday, June 7, 2018 4:40 PM
То:	Ayres, Bob; cole.ramshaw@ccgs-ngcc.gc.ca
Subject:	Re: Bartlett
Thanks for the quick response	e Bob.
I spoke with WCB after I en	nailed you. They directed me to their Exposure Registry Program (form 41M1).
http://www.worksafebc.com/e41m1?lang=en	en/resources/health-care-providers/forms/exposure-registry-program-form-
I am somewhat familiar with "information only".	n the form 6 from my OFA training, but I am unsure how to fill it out as
A meeting with the Dr. woul	d be great.
Thanks,	
On Thu, Jun 7, 2018, 3:22 PM	A Ayres, Bob, < Bob.Ayres@dfo-mpo.gc.ca> wrote:
Hi	
their potential exposure should form 6 for employee. If so thes	lier from Dr. Krawciw at Health Canada was that yes anyone who is concerned about donsider filing an information only claim with Worksafe. WCB form 7 for employer and se would be sent to Worksafe in the usual manner and then a copy provided to Health sed to the person's file, in case of an issue down the road. One can (should) also consider physician.
I spoke with the Dr. again this a future.	afternoon and there is a possibility he may be able to attend a crew meeting in the near
Feel free to call me directly if t	hat might be helpful,
Bob	

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Bob Ayres

Manager, Coast Guard Safety and Security

Canadian Coast Guard - Western Region

25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636

Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

From:

Sent: Thursday, June 7, 2018 1:17 PM

To: Ayres, Bob < Bob.Ayres@dfo-mpo.gc.ca >

Subject: Bartlett

Hi Bob,

In light of the recent findings on the Bartlett, I have concerns about long term asbestos and lead paint exposure on the Bartlett. Should I be contacting WCB about recording this?

Thanks for the help,

McNish, Joanne

From:

McNish, Joanne

Sent:

Friday, June 8, 2018 8:09 AM

To:

Bennett, Bob

Subject:

RE: Western Region - Fleet Readiness Profile

Agree with your interpretation, and agree it should not be issued until end of refit. Ops reduced (mission delay).

Currently refit.

June 29th - NINP and ops reduced.

Joanne

From: Bennett, Bob

Sent: Friday, June 8, 2018 7:22 AM

To: McNish, Joanne < Joanne.McNish@dfo-mpo.gc.ca> **Subject:** Western Region - Fleet Readiness Profile

For your consideration.

Due to the ACM contamination on board Bartlett and unscheduled maintenance to remediate.

Recommend a change in the Fleet Readiness Profile from blue (Ops Normal) to condition white (Ops Restricted), depending on your interpretation our Fleet Readiness could also be changed to condition yellow (Ops. Reduced).

Please note that I've dated the change to our Readiness Profile June 29th, 2018 when Bartlett was scheduled to return to service.

This notification would also meet the criteria for issuing a NINP.

A2 Commissioner Critical Information Requirements (CCIRs):

- Damage or mechanical failure to a CCG vessel or aircraft which impacts its operational effectiveness or ability to complete assigned tasks.
- Any changes to Coast Guard Fleet Readiness Levels.

If you would like to proceed with the change to our Readiness Profile, I'll prepare a NINP for your approval.

Bob

McNish, Joanne

From:

Bennett, Bob

Sent:

Friday, June 8, 2018 8:37 AM

To:

McNish, Joanne

Subject:

FW: Health Canada - Asbestos discussion - Shop Lunchroom 1400

FYI - the Asbestos talk with Dr. K has been extended to both E & I and MCI work crews.

From: CCGS-NGCC, Bartlett Chief Officer [mailto:BartlettCHO@ccgs-ngcc.gc.ca]

Sent: June-08-18 8:24 AM

To: Ayres, Bob; Chaikin, Gabriel; Jersch, Russell; Bennett, Bob; CCGS-NGCC, Bartlett Captain **Cc:** CCGS-NGCC, Bartlett Chief Engineer; Readman, Tristan; Specht, Rick; Lawson, Jesse

Subject: RE: Health Canada - Asbestos discussion - Shop Lunchroom 1400

Thank you for organizing this. The majority, if not all crew, of the Bartlett will be attending today.

Thank you again.

Chris Couch

Chief Officer, Red Crew, CCGS Bartlett

Email: BartlettCHO@ccgs-ngcc.gc.ca

Chief Officer Cell:

Ship's Tellular:

Iridium Satellite:

Mailing Address: 25 Huron Street Victoria BC V8V 4V9

From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]

Sent: June-08-18 8:18 AM

To: Chaikin Gabriel; Jersch Russell; Bennett Bob; CCGS-NGCC, Bartlett Captain

Cc: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Chief Officer; Readman Tristan; Specht Rick; Lawson Jesse

Subject: Health Canada - Asbestos discussion - Shop Lunchroom 1400

Hello all,

As noted below, we've asked Dr. Krawciw to attend at Vic Base today at 1400 to discuss the asbestos concerns related to the CCGS Bartlett.

As E&I technicians may have similar concerns due their work on CCG ships and MCI employees also may have potential exposure due their own work environments we've extended the invitation there as well.

The meeting will take place in the shops lunchroom which will allow room for any who wish to come and hear the discussion or ask a related question.

Regards,

Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

From: Ayres, Bob

Sent: Thursday, June 7, 2018 7:29 PM

To: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>; Jersch, Russell <Russell.Jersch@dfo-mpo.gc.ca>; Bennett, Bob <Bob.Bennett@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca) <BartlettCO@ccgs-

ngcc.gc.ca>

Subject: Re: Health Canada

Dr. K has confirmed that 1400 tomorrow works for him to come and meet with Bartlett crew.

I will look to confirm a room in the morning. Is it fair to assume the majority of crew will attend?

Also as discussed Gabe can we confirm that NW can take part in that.

Unless there is objection I will also extend an invitation to E&I and MCI in case some of their group are interested in attending.

Regards,

Bob

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Ayres, Bob

Sent: Thursday, June 7, 2018 3:33 PM

To: Chaikin, Gabriel; Jersch, Russell; Bennett, Bob; CCGS-NGCC, Bartlett Captain (<u>BartlettCO@ccgs-ngcc.gc.ca</u>)

Subject: Health Canada

Hi all,

I let Russell know that I spoke with Dr. Krawciw and he is going to get back to me this evening with confirmation (hopefully, as they have some juggling to do) that he can attend tomorrow to speak with crew. When I get word I will let you know.

Gabe, if he can it will likely be in the afternoon – would NW Env also be available then to speak jointly? I assumed so.

Thanks, Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region

s.16(2) Information

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25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

No further information has been removed or severed from this page

Ayres, Bob

From:

Ayres, Bob

Sent:

Monday, June 11, 2018 3:20 PM

To:

Jersch, Russell

Subject:

FW: Bartlett Asbestos

FYI, regarding request for hygienist input.

Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>

Sent: Monday, June 11, 2018 2:47 PM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>

Subject: RE: Bartlett Asbestos

Thanks Bob – I've forwarded this along – please check back with me in 2 weeks if you haven't heard from me or someone at Health Canada before then.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B) Santé Canada / Gouvernement du Canada don.krawciw@hc-sc.gc.ca / Tél.: 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]

Sent: 2018-06-11 12:47 PM To: Krawciw, Don (HC/SC) Subject: Bartlett Asbestos

Hello Don,

Apologies for delay in getting this to you today – morning got busy.

Attached are the reports from testing on Bartlett.

- 1. AB1 is the bulk sample from May 17th
- ABWIPE1 is wipe test from various locations on board report date May 23rd
- 3. Pb1 is the lead sample from paint on metal report date May 21st
- 4. 551806441 is the more recent dust sampling (collected May 31st) which includes the results from the stack (funnel) on Bartlett

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As discussed we'd be very interested in the assistance of your industrial hygienist in providing a review of these sampling results.

Any expert of informed opinion would be welcome with regard interpretation of the numbers in the various reports and the likely meaning of these to our employees who have potentially been exposed.

Cleaning and remediation efforts are currently underway. We are considering how best to communicate further to employees past and present regarding potential exposure and documenting of this potential in case (hopefully not) of need for future claim etc.

Thanks again for coming down and speaking with our people on Friday. It was very helpful.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

Ds/16(2) ent Released Under the Access to Inf 175(1) ation Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

CCGS-NGCC, Bartlett Captain

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

June-11-18 9:13 AM

To:

CCGS-NGCC, Bartlett Captain

Cc:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer

Subject:

FW: Bartlett cabin clearances

Attachments:

35254 AA7 V1.0 2018-06-11 - CCGS Bartlett.pdf

Follow Up Flag:

Follow up Flagged

Flag Status:

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From:

Sent: June-11-18 8:33 AM

To: Chaikin Gabriel; CCGS-NGCC, Bartlett Chief Engineer; Chris Igwe

Cc:

Subject: Bartlett cabin clearances

Good morning, air clearances for cabins attached, all below detection limit. Enclosures for cabins already inspected can be removed.

J

Sent from my Samsung Galaxy smartphone.

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERT	IFICATE	OF	ANALYSIS	

Client: North West Environmental Group Ltd.

Report Date: 6/27/2018

201 - 415 Gorge Road East

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Victoria BC V8T 2W1 Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.: 35254-91b

Location: Upper D: Laundry Room-HVAC Duct Concentration (s/cm²): <3700

Area (cm²): 100 Density (s/mm²): <7.69 Asbestos Type(s): None Detected

Lab No.:6541815

Location: Boat D: Fan Room-HVAC Duct

Concentration (s/cm²): 14800

Area (cm²): 100 Client No.:35254-92b Density (s/mm²): 15.4

Asbestos Type(s): Amosite Chrysotile

Lab No.:6541816

Location: Wheelhouse-HVAC Duct

Concentration (s/cm²): 55500

Client No.: 35254-93b

Area (cm²): 100

Asbestos Type(s): Chrysotile Amosite

Density (s/mm²): 115

Lab No.:6541817

Client No.: 35254-94b

Location: Poop D: Alley Adjacent Galley-Main Concentration (s/cm²): 29600

Asbestos Type(s): Chrysotile

Area (cm²): 100

Recirc Duct

Density (s/mm²): 30.8

Lab No.:6541818 Client No.: 35254-95b

Lab No.:6541819

Heating Duct

Location: Upper D: Cabin U-38 Supplemental Concentration (s/cm²): 3700

Area (cm²): 100

Asbestos Type(s): Chrysotile

Density (s/mm²): 7.69

Location: Upper D: 3rd Officer-Supplemental Concentration (s/cm²): 3700

Client No.: 35254-96b

Heating Duct

Asbestos Type(s): Amosite Chrysotile

Area (cm2): 100 Density (s/mm²): 15.4

Lab No.:6541820 Client No.: 35254-97b Location: Boat D: Chief Officer-Supplemental Concentration (s/cm²): <3700

Asbestos Type(s): None Detected

Heating Duct

Area (cm2): 100 **Density (s/mm²): <7.69**

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Signature: Analyst:

Dated: 6/28/2018 6:30:55

Page 1 of 4

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541821 Client No.: 35254-98b Location: Field Blank Area (cm²): 100

Concentration (s/cm²): <185 Asbestos Type(s): None Detected

Density (s/mm²): <19.2

Lab No.:6541822 Client No.: 35254-102b Location: Stack-Stbd Air Supply Plenum

Concentration (s/cm²): 6660 Asbestos Type(s): Chrysotile

Area (cm2): 100 Density (s/mm²): 692

Lab No.:6541823 Client No.:35254-103b Location: Stack-Main Engine Water Jacket Tank Concentration (s/cm²): <617

Area (cm²): 100

Asbestos Type(s): None Detected

Density (s/mm²): <19.2

Lab No.:6541824 Client No.: 35254-104b

Location: Stack-Exhaust Pipe Support Strut

Concentration (s/cm²): 6940 **Asbestos Type(s):** Chrysotile

Area (cm²): 100

Density (s/mm²): 288

Lab No.:6541825

Client No.: 35254-105b

Location: Stack-Bulkhead Stiffener

Area (cm²): 400

Concentration (s/cm²): 1730 Asbestos Type(s): Chrysotile Tremolite

Density (s/mm²): 288

Lab No.:6541826 Client No.: 35254-106b

Location: Field Blank Area (cm2): Blank

Density (s/mm²): <7.69

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Signature: Analyst:

Dated: 6/28/2018 6:30:55

Page 2 of 4

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/28/2018 6:30:55



Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date:

6/27/2018

566679 - TEM Dust Wipe

201 - 415 Gorge Road East

Report No.: Project:

CCGS Bartlett-General Hazmat Consulting

Victoria BC V8T 2W1

Project No.:

35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

Client: NOR765

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

CCGS-NGCC, Bartlett Captain

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

June-11-18 9:16 AM

To:

CCGS-NGCC, Bartlett Captain

Cc:

CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer

Subject:

FW: Bartlett - Wipe Results update

Attachments:

COA_565543.pdf

Follow Up Flag:

Follow up

Flag Status:

Flagged

Senior to post sign limiting access to compartment, and not to disturb heavily soiled areas.

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From:

Sent: June-11-18 8:01 AM

To: Chaikin Gabriel:

Cc: Chris Igwe; CCGS-NGCC, Bartlett Chief Engineer; Joel Shandro; Shaun Craveiro; Grant Rogers

Subject: Bartlett - Wipe Results update

Good morning, we just received the results for wipe samples collected in the Winch Compartment, Bosun's Stores, and Cargo Hold.

- 1. Winch compartment: moderate range, chrysotile. Samples were collected from heavily soiled surfaces that were not cleaned during the refit work. Suggest that touch up cleaning be conducted in this space, focussing on heavily soiled surfaces.
- 2. Gym: expected ambient range and much improved compared to pre-clean tests. Air clearances were below the limit of detection. Going forward: monitor and clean regularly with HEPA vacuum.
- 3. Bosun's Stores: expected ambient range. Suggest this is a low priority area. Going forward: Monitor and clean regularly with HEPA vacuum, do not store clothing that is potentially contaminated, and have procedures in place for removing materials/equipment (particularly materials/equipment that has accumulated dust).
- 4. Cargo Hold: expected ambient range, 2 out of 4 found chrysotile. Suggest this is a low priority area. Going forward: Monitor and clean regularly with HEPA vacuum and have procedures for removing stored material/equipment. Samples collected from heavily soiled surfaces.

We will look to CME/CCG to provide final direction with regard to whether these spaces will undergo a clean and to what extent.

Please let me know if you have any questions.

Best,

Project Manager

North West Environmental Group Ltd.

						, ,						, —,				···········
Comment	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
ъоп	>	<		>		>	<	<		>	v		>		>	v
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Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	00.0	8.92	7.64	12.10	3.18	9.55	5.10	0.00	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0'0	7.0	6.0	9.5	2.5	7.5	4.0	0.0	5.0	1.5	2.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time Off	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2.61	0	2.92	0	2.92	16.1	16.1	0	2.4	2.61	0	2,64	0	2.18	14.41
Type* Analyst	O.	JD	Ωſ	BR	BR	BR	BR	BR	BR	Ωſ	Oί	JD	ac	αr	Qſ	ЭО
Type*	220	AMB	ည	AMB	20	AMB	AC	AC	ည	AMB	200	ည	AMB	သ	AMB	AC
Area	(OCC) Occupational	(AMB) Cargo Hold Adj. Gym Entrance		(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational	Jun-08-2018 (QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	Jun-08-2018		Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	35254-11a Jun-05-2018 Jun-06-2018	35254-12a Jun-05-2018	35254-13a Jun-05-2018	35254-14a Jun-06-2018 Jun-07-2018	35254-15a Jun-06-2018	35254-16a Jun-06-2018	35254-17a Jun-06-2018	35254-18a Jun-06-2018	35254-19a Jun-06-2018	35254-20a Jun-07-2018	35254-21a Jun-07-2018	35254-22a Jun-07-2018	35254-23a Jun-08-2018	Jun-08-2018	Jun-09-2018	35254-26a Jun-09-2018
Sample No	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

PAT PROGRAMS.
AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

2/4

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Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22.93	22.29	00.0	00.0
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512.95	2497.72	0	0
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0'0	0.0
Time (Mins)	313	312	169	168	168	167	165	164	0	0
off Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00
Tíme On	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00
Avg. Flow Rate (Ipm)	2.1	2.35	15.46	15.23	15.46	15,23	15.23	15,23	0	0
Analyst	Ωć	JD	ac	ď	ac	ЭЭ	ar	αſ	JD	Ωſ
Type*	AMB	AMB	AC	AC	AC	AC	AC	AC	AC	ည
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank
Date Analysed	Jun-11-2018	Jun-11-2018			Jun-11-2018	Jun-11-2018	Jun-11-2018			Jun-11-2018
Date Collected	35254-27a Jun-10-2018 Jun-11-2018	35254-28a Jun-10-2018 Jun-11-2018	35254-29a Jun-10-2018 Jun-11-2018	35254-30a Jun-10-2018 Jun-11-2018	35254-31a Jun-10-2018 Jun-11-2018	35254-32a Jun-10-2018 Jun-11-2018	35254-33a Jun-10-2018 Jun-11-2018	35254-34a Jun-10-2018 Jun-11-2018	35254-35a Jun-10-2018 Jun-11-2018	35254-36a Jun-10-2018
Sample No	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a

kers involved PAT PROGRAMS ance with this AHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

3/4

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mil AMB – ambient: sample collected in an occupied space adjacent to the work area, Must not exceed 0.1 fibres per mi

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml. (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)
Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires of

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

AIRA PROFICIENCY ANALYTICAL TESTING PROGRAMS Z As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

LAB# 202314

001149

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529001 Client No.:35254-47b Location: Gym-Top Of Electrical Cabinet

Area (cm²): 100

Density (s/mm²): 38.5

Concentration (s/cm²): 1230

Asbestos Type(s): Chrysotile

Lab No.:6529002 Client No.:35254-48b Location: Gym-Top Of Light

Area (cm²): 100 Density (s/mm²): 115 Concentration (s/cm²): 2780 Asbestos Type(s): Chrysotile

Location: Winch Room-Top Of Aft Heater

Area (cm²): 100

Concentration (s/cm²): 25400 Asbestos Type(s): Chrysotile

Lab No.:6529003 Client No.:35254-49b

Density (s/mm²): 106

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature:
Analyst:

Dated: 6/11/2018 10:21:27

Approved By:

Frank E. Ehrenfeld, III

Frank E. Ehrenfeld, II Laboratory Director

s.19(1) Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.



Analyst:

Dated: 6/11/2018 10:21:27

9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

				C	ERTIFICAT	TE OF ANA	LYSIS		
Client:	North We	st Env	ironmental (Group Ltd.		I	Report Da	ite:	6/8/2018
	201 - 415	Gorge	Road East			I	Report No).:	565543 - TEM Dust
	Victoria	BC	V8T 2W1			ī	Project:		Wipe CCGS Bartlett-General Hazmat Consulting
		DC	701211				Project No	o.:	35254
Client:	NOR765								
 		· · · · · · · · · · · · · · · · · · ·	T	EM WIPE S	AMPLE	ANAL	YSIS S	UN	MMARY
Lab No.:6				Location: Wincl	h Room-Top	Of Stbd Af			centration (s/cm²): 12700
Client No.	.:35254-50	b 		Area (cm ²): 100 Density (s/mm ²)				Asb	estos Type(s): Chrysotile
Lab No.:6	5529005			Location: Bosor	n Stores-Top	Of Electric	al Box	Con	acentration (s/cm²): <2310
Client No.	.:35254-51	b		Area (cm²): 100 Density (s/mm²)		A به نمو من		Asb	estos Type(s): None Detected
Lab No.:6	5529006			Location: Boson	ı Stores-Top	Of Unused	Cable	Con	acentration (s/cm²): 2310
Client No.	.:35254-52	b		Tray	_				estos Type(s): Chrysotile
				Area (cm ²): 100 Density (s/mm ²)					
Lab No.:6	5529007			Location: Cargo	Hold-Forwa	ard Port She	if	Con	ecentration (s/cm²): <1850
Client No.	.:35254-53	b		Area (cm ²): 100 Density (s/mm ²)				Asb	estos Type(s): None Detected
Lab No.:6	5529008			Location: Cargo	Hold-Forwa	ard Stbd Cal	ble	Con	acentration (s/cm²): 3700
Client No.	.:35254-54	b		Shield Plate					estos Type(s): Chrysotile
				Area (cm ²): 100 Density (s/mm ²)	. 20 5				
Lab No.: 6	(520000			I acations Cores					centration (s/cm²): 9250
	.:35254-55	ь		Box	Hold-Alt F	oit i chow i			estos Type(s): Chrysotile
				Area (cm²): 100					
				Density (s/mm²)	: 38.5				
Lab No.:6	5529010			Location: Cargo	Hold-Aft S	tbd Electrica	al Box	Con	ncentration (s/cm²): <925
Client No.	.:35254-56	b		Area (cm²): 100				Asb	estos Type(s): None Detected
				Density (s/mm²)	: <19.2				
Please ref	er to the P	reface	of this repo	ort for further info	ormation re	garding you	ur analysi	is.	
Date Rece		6/8/2			.,		Approved		
Date Analy	-		8/2018				Approved	u Dy	Jones Company
`									Frank E. Ehrenfeld, III
Signature:									Laboratory Director

Page 2 of 5

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6529011 Client No.:35254-57b Location: Field Blank Area (cm²): Blank Density (s/mm²): <19.2 Concentration (s/cm²): NA Asbestos Type(s): None Detected

	ed By: Fre English	4	£/0/2010	
Date Analyzed: 06/08/2018			0/0/2010	ate Received:
rank E. Entenero, III	Fronk C Chronfold III	-	06/08/2018	ate Analyzed:
ignature: Laboratory Director	•			

Dated: 6/11/2018 10:21:27

Page 3 of 5

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: 6/8/2018

201 - 415 Gorge Road East

Report No.: 565543 - TEM Dust Wipe

Victoria BC V8T 2W1

Project: CCGS Bartlett-General Hazmat Consulting

Project No.:

25254

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CEP 762

Dated: 6/11/2018 10:21:27

Page 4 of 5

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

6/8/2018 Report Date:

201 - 415 Gorge Road East

565543 - TEM Dust Wipe

Victoria BC V8T 2W1

Project: CCGS Bartlett-General Hazmat Consulting

35254

Project No.:

Report No.:

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Project:

Report No.: 565543 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529001 Client No.:35254-47b

Volume Filtered (mL): 15 Dilution Factor (mL): 50 Grid Openings: 4

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 617

Micrograph Number: EDXA Spectrum ID:

Lab No.:6529002 Client No.:35254-48b

Volume Filtered (mL):20 Dilution Factor (mL):50 Grid Openings:4 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):463

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Gym-Top Of Electrical Cabinet

Asbestos Structures: 2

Structures < 5 Microns: 2 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 38.5 Structure Concentration (s/cm²): 1230

Asbestos Type(s): Chrysotile

Area Sampled (cm²): 100 Location: Gym-Top Of Light

Asbestos Structures: 6

Structures < 5 Microns: 6
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 115
Structure Concentration (s/cm²): 2780
Asbestos Type(s):

Page 1 of 7

Chrysotile

Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: 2

Structure Density (s/mm²):38.5 Structure Concentration (s/cm²):1230

Non-Asbestos Type(s):

SiMg - Talc SiAl - Other Fiber

Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45 Non-Asbestos Structures: 3

Structure Density (s/mm²): 57.7 Structure Concentration (s/cm²): 1390 Non-Asbestos Type(s):

SiMg - Talc SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature: Analyst:

Dated: 6/11/2018 10:21:27

Approved By:

Frank E. Ehrenfeld, III

The Tue

Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529003

Client No.: 35254-49b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Winch Room-Top Of Aft Heater

Asbestos Structures: 11

Structures < 5 Microns: 8 Structures ≥ 5 µm: 3

Structure Density (s/mm²): 106 Structure Concentration (s/cm²): 25400

Asbestos Type(s):

Chrysotile

Filter Type: MCE
Filter Size (mm²): 962
Pore Size (µm): 0.45
Non-Asbestos Structures: 2

Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 4630

Non-Asbestos Type(s): SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018

Date Analyzed:

06/08/2018

Signature: Analyst:

Dated: 6/11/2018 10:21:28

Approved By:

Frak Emanfel

Frank E. Ehrenfeld, III Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565

565543 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529004 Client No.:35254-50b

Volume Filtered (mL):4 Dilution Factor (mL):50 Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):1160

Area Sampled (cm²):100

Location: Winch Room-Top Of Stbd Aft Shelf

Asbestos Structures: 11

Structures < 5 Microns: 11
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 106
Structure Concentration (s/cm²): 12700

Asbestos Type(s):

Chrysotile

Filter Type: MCE Filter Size (mm²): 962 Pore Size (um): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<1160

Non-Asbestos Type(s): None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6529005 Client No.:35254-51b

Volume Filtered (mL):2 Dilution Factor (mL):50 Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Boson Stores-Top Of Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤9.62 Structure Concentration (s/cm²): ≤2310

Asbestos Type(s): None Detected Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310 Non-Asbestos Type(s):

None Detected

P	lease ref	er t	o t	he.	Pretace	ot:	this	report	tor	further	· informa	tion r	egard	ıng	your	analy	ysıs
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Date Received:

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Date Analyzed:

Signature: Analyst: 06/08/2018

6/8/2018

Approved By:

Fre Enerfel

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/11/2018 10:21:28

Page 3 of 7

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529006

Client No.: 35254-52b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):2310

Area Sampled (cm²): 100

Location: Boson Stores-Top Of Unused Cable

Asbestos Structures: 1

Structures < 5 Microns: 1

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 9.62 Structure Concentration (s/cm²): 2310

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (um): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6529007 Client No.: 35254-53b

Volume Filtered (mL):20 Dilution Factor (mL):50 Grid Openings: 1

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0130 Sensitivity (s/mm²):76.9 Detection Limit (s/cm²):1850

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Cargo Hold-Forward Port Shelf

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <76.9 Structure Concentration (s/cm²): <1850

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Type(s):

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<76.9 Structure Concentration (s/cm²):<1850

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

Date Analyzed:

Signature: Analyst:

6/8/2018

06/08/2018

Approved By:

Fre Ina

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/11/2018 10:21:28

Page 4 of 7

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529008

Client: NOR765

Client No.: 35254-54b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings:8
Opening Area (mm²):0.013
Area Analyzed (mm²):0.104
Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):925

Area Sampled (cm²): 100

Location: Cargo Hold-Forward Stbd Cable

Shield Plate

Asbestos Structures: 4

Structures < 5 Microns: 4

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 38.5 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6529009 Client No.:35254-55b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings: 8 Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62

Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID: Area Sampled (cm²): 100

Location: Cargo Hold-Aft Port Yellow Lockout

Box

Asbestos Structures: 4

Structures < 5 Microns: 3 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 38.5 Structure Concentration (s/cm²): 9250

Asbestos Type(s): Chrysotile

Filter Type: MCE Filter Size (mm²): 962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Date Received:

Date Analyzed:

6/8/2018

06/08/2018

Signature: Analyst:

Dated: 6/11/2018 10:21:28

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6529010 Client No.:35254-56b

Volume Filtered (mL): 10 Dilution Factor (mL): 50

Grid Openings: 4
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.0520

Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 925 Area Sampled (cm²): 100 Location: Cargo Hold-Aft

Location: Cargo Hold-Aft Stbd Electrical Box

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤19.2 Structure Concentration (s/cm²): ≤925

Asbestos Type(s): None Detected Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s): None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6529011 Client No.:35254-57b

Volume Filtered (mL): 10 Dilution Factor (mL): 50 Grid Openings: 4 Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):Blank Location:Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):NA Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/8/2018 06/08/2018

Date Analyzed:

Signature:

Analyst:

Dated: 6/11/2018 10:21:28

Approved By:

Fre Enerfel

Frank E. Ehrenfeld, III Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/8/2018

Report No.: 565543 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

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CCG Marine Supt Western / GCC de l'Ouest Supt Marine (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Officer <BartlettCHO@ccgs-ngcc.gc.ca>

Sent: June-12-18 2:28 PM **To:** Jersch, Russell

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer

Subject:Exposure Registry ProgramAttachments:Exposure Registry Program.pdf

Hello Russell Jersch,

Last week you mentioned an Occupational Health and Safety package would be prepared for the ship for our asbestos exposure. I realize crew change is quickly approaching (tomorrow), and there may not be an opportunity to get the forms before this. As an alternative, I could organize the WCB Registry forms for all the current crew and begin contacting previous crew members. I have also included this form for your records. The Health Canada doctor mentioned registering for the Health Canada Exposure program, but I have been unable to locate this form.

WCB Exposure Registry Program

https://www.worksafebc.com/en/resources/health-care-providers/forms/exposure-registry-program-form-41m1?lang=en

Thank you for the assistance.

Chris Couch

Chief Officer, Red Crew, CCGS Bartlett

Email: BartlettCHO@ccgs-ngcc.gc.ca

Chief Officer Cell:
Ship's Tellular:
Iridium Satellite:

Mailing Address: 25 Huron Street Victoria BC V8V 4V9

WORKING TO MAKE A DIFFERENCE

Exposure Registry Program

Prevention Support Services of this form, please contact regarding the completion Prevention Records at 604 276-3231.

If you have any questions

Have you been exposed to a harmful substance or agent at work? From ation Act / Document divulgue en vertu

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If you have, you may be entitled to compensation as set out under section 6 of the dela Loi sur laccès à l'information. Workers Compensation Act if you develop an occupational disease due to the exposure now or in the future.

occupational diseases, WorkSafeBC has created this new exposure registry as a way for workers, employers, and others to register a worker's exposure to a harmful substance or agent at work. The information obtained through the registry will be kept as a Due to the latency and long period of exposure required for the onset of some permanent record of a worker's exposure.

If your exposure has resulted in medical treatment or time loss from work, please complete an application for compensation

Phone 1 888 WORKERS (1 888 967-5377) or #5377 for TELUS, Rogers, and Bell mobility customers, Monday to Friday, 8 a.m. to 4 p.m. PST

To report a serious incident or fatality

Phone 1 888 621-SAFE (7233) Monday to Friday, 8 a.m. to 4 p.m. PST, or toll-free 1 866 WCB-HELP (922-4357) after hours.

to the worker, the employer, or their respective representatives, or to others in accordance Protection of Privacy Act. I acknowledge that WorkSafeBC may disclose this information with the Workers Compensation Act and the Freedom of Information and Protection of I understand the information on this form is collected, used, and disclosed under the authority of the Workers Compensation Act and the Freedom of Information and

mandatory field.

* Indicates a

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Person submitting information*	*	Date of regist	tration* (yyyy-mm-dd)	Has the employer of the exposure?*	Date of registration* (yyy-mm-dd) Has the employer been informed of the exposure?*
Worker ☐ Employer ☐ Other ☐	ther 🗖			Yes 🗖	No 🗖
WORKER INFORMATION	N				* Indicates a mandatory field
Worker's last name*			First name*		
Mailing address line 1*					
Mailing address line 2	2004			City*	
Country* Select:	Prov	Province/State*	Postal code/Zip*	Phone number (8: (nnn nnn-nnn nnnn)	Phone number (8:30 a.m4:30 p.m.) (nnn nnn-nnnn nnnn)
	Date	Date of birth* (yyyy-mm-dd)	-mm-dd)	Date of hire* (yyyy-mm)	(уууу-тт)
Male ☐ Female ☐					
Occupation*					

Page 1 of 4

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Employer's mailing address line 2	dress line 2			City*	
Country* Select:		Province/State*	Postal code/Zip	Phone number* (8:30 a.m4:30 p.m.) (nnn nnn-nnn nnnn)	
Industry* Select:					1
If other (or multiple industries), please specify	ndustries), pleas	e specify			

Page 2 of 4

SOBMITTER INFORMATION	לוו ווסר רווב	worker or employer)	A P C A A A A A A A A A A A A A A A A A	
Last name of contact person*		First name of contact person*		
Organization name				
Mailing address line 1*				
Mailing address line 2			City*	
Country*	Province/State*	Postal code/Zip*	Phone number (8:30 a.m4:30 p.m.)	
Select:			(חחח חחח-חחח חחח)	
Submission on behalf of*		Has the employer b	Has the employer been informed of the exposure?*	
Worker ☐ Employer ☐		Yes ☐ No ☐		

If you're a worker or employer, the Submitter Information section will auto-populate. If you need to make changes, please go back to the Worker Information or Employer Information sections.

Work incident location (address, city, province) and where incident occurred* (e.g., shop floor, lunchroom, parking lot)

tart date of exposure* (yyyy-mm-dd)	End date of exposure* (yyyy-mm-dd)	уууу-тт-дд)
<pre>dow did the exposure occur?* Select:</pre>	If other (or multiple occ	If other (or multiple occurrences), please specify
riefly describe the exposure*		
What was the worker exposed to?* Select:	If other (or multiple exposures), please specify	osures), please specify
Vas personal protective equipment required?*	?* Was personal protective equipment provided?*	equipment provided?*
es ☐ No ☐ Unknown ☐	Yes 🗇 No 🗇	Unknown 🗖
Vas personal protective equipment used?*	When you're finished completing this form, use the "Validate & save" button below. Once validated and saved, use the "Submit" button.	ise the "Validate & save" button below button.

Page 4 of 4

s.16(2)
Someont Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

June-13-18 4:58 PM

To:

CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC,

Bartlett Captain

Subject:

FW: CE H/O Notes

Attachments:

HON 2018-06-13 Red.pdf

Importance:

High

FYI. Attached CE H/O Notes outlines a lot of asbestos work that happened over previous 4 weeks.

Draft ACM IIR contains similar outline.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: June-13-18 4:26 PM

To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room

Subject: CE H/O Notes **Importance:** High

See attached HO notes

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

Crew		Chief Engineer	Matt Jackson	
Senior Engineer	Steve Buss	QA Engineer	Colin Battand	
Second Engineer	Nobuo Gondo May 24-June 2 Onboard Neocaligus	Oiler #1	Carl Olson	
Third Engineer May 16-21	Brian Blount	Oiler #2	Lorne Robertson	
Third Engineer May 22-June 13	James Rottino	Cadet #1	Jaxon Stel	
电子 建物电影 使有关的		Cadet #2	Brendan Wootton	
Period Start	16-05-2018	Period End	13-06-2018	

Defects & Immediate Concerns

See below, Senior Engineer's HON, Contracted Items Tracking Sheet, Contracted Piping Items Tracking Sheet, Self-Refit List, Vessel Specific Asbestos Management Plan, Ongoing Asbestos IIR, Master Defect List, and MAINTelligence

Machinery Performance & Repairs

Propulsion Machinery

SME

-JW is noticeable lighter in color despite acceptable Maxigard concentration tests.

Stern Tubes

-Tightened and signs posted in MCR and at hand wheels.

Ship Service Generators

Shore Power Kiosk

-No 480VAC available at any Kiosk. Cord end from Powecon (AMS), used to make adapter for the CME welding power supply.

Auxiliary Machinery

Compressed Air

-Harbour air compressor unloader valve diaphragm replaced.

Fire Main

-all removed fire stations have blanks fitted. More fire stations were taken out of service than planned. CME was able to test and return to service as many as possible before being shut down due to ACM concerns. Currently out of service: fire station aft of bridge port and stbd side (station #14/15), aft starboard fire station in the AMS (ready to reinstall once CME has access) and fwd starboard fire station in the ER.

Fuel Log

-Provo crew changed the sounding tables back when they joined in 2011. Looking at the old fuel logs 85cm was 95%. See SR list for details.

Galley

-Looked into installing the new wash down and fan controller but ran out of time. This is not a drop in replacement and some tracing of wires will be required.

HON 2018-06-13 Red.doc Page 1 of 5



PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

Electrical Generation & Distribution & Electronics

Phone System

-IP Epic center console reconnected by VIEW. They would like to be informed next time the PBX system has problems. I reset the system just after crew change.

Deck Machinery

Derrick

-De-rigged by deck crew. Inspections completed but no SSGs available to re-rig.

ISM/Safety/TC

Asbestos

- -Limited Hazardous Materials Assessment results returned with varying levels of asbestos dust in the spaces tested. Most the bridge consoles despite the cleaning are still contaminated. Contamination not nearly the same level as before. These spaces will have to be treated as moderate risk procedures.
- -Air sampling was performed in the locations which dust wipes returned showing contamination. All results were below the threshold all though the AMS and MCR samples were contaminated with welding fumes. They were resampled but for a short duration.
- -Fire panel insert installed in the wheel house console. Fire panel was cleaned with the help of George. Tested and back operational.
- -Stbd manhole cover on the bridge void space removed and modified with a vent port for the void negative pressure ventilation plan. A negative pressure machine is on order and should be arriving soon. The plan was to mount it inside the void space to create the negative pressure inside the wheelhouse consoles. Hard ducting to be sourced and installed (JB sheet metal). Not arranged yet. Looking at the console, I do not believe there will be a way to clean them to the point they could be accessed without precautions and PPE.
- -Six sampling pumps and 100 TEM cassettes are being purchased by Marine Engineering for onboard testing.
- -The Marine Superintendent and Manager of Safety and Security are going to provide information so employees can identify with Worksafe BC in their Exposure Registry Program. This will document their potential exposure in case of future health difficulties. There will also be a method of recording the potential exposure with Health Canada (same files as our seagoing medicals).

-IIR Asbestos Details So Far:

May 15-17, 2018 - Prior to the alongside contracted self-refit period, a Limited Hazardous Materials Assessment Survey was conducted by Northwest Environmental Group (NWE). The survey included bulk sampling of suspected asbestos containing materials, paint chip samples testing for lead and Transmission Electron Microscopy (TEM) dust wipe samples as a follow up to the Wheelhouse Console ACM Dust IIR Patrol 17-12. The bulk sampling and paint chip sampling were to taken to cover the contracted refit work being performed by Canadian Maritime Engineering (CME).

May 29, 2018 - The results of the TEM dust wipe samples were received. Varying levels of asbestos structures contamination in dust were reported. NWE: "Asbestos Concentrations in dust has no correlation to the concentration in the air. This is dependent on several factors including impact/disturbance of the dust due to direct contact or vessel vibration." Some of the dust sampled was adhered to the surface by an oily/greasy film. Locations sampled were not normally accessible: above cable trays in machinery spaces, top of ventilation ducts, above deckhead lining panels in accommodations, inside control consoles and on top of control cabinets. Positive results inside the consoles were expected as the cleanup in February 2018 was not expected to remove all asbestos containing dust. Upon receiving positive results for asbestos in the latent dust Marine Engineering, Regional Operations Center, contractors working onboard and ship's crew were informed of the results. Contractor and ship's crew work that could disturb the dust in the effected areas was stopped.

May 31, 2018 - Air sampling was performed by NWE in the locations which dust wipe samples results returned positive for asbestos. Results from the air sampling received were below either the limit of quantitation or detection. Additional dust wipe samples were taken to determine the extent and source of the asbestos dust contamination.

Meeting to determine the scope of work required and way to move forward with the clean up include the following parties:

- CCG ITS Marine Engineering (ME), Vessel Maintenance Manager (VMM)
- CCGS Bartlett Engineering Department Chief and Senior
- · CCG Safety and Security, Manager
- · Public Works Contracting Officer
- Canadian Maritime Engineering (CME) Primary Contractor

HON 2018-06-13 Red.doc Page 2 of 5



PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

- * Emery Electric Limited subcontracted by CME for electrical work
- Northwest Environmental Group asbestos consultants
- Quantum Murray Environmental remediation company

June 1-June 4, 2018 No work conducted by contractors or crew that could disturb the dust. While mobilization and preparations for clean-up put into action.

June 5, 2018 Quantum Murray (QM) subcontracted by Canadian Maritime Engineering to perform clean up and encapsulation of AC dust with oversight of clean-up performed by NWE. QM setup and started work in Gym, Engine Room (ER), Machinery Control Room (MCR) and Auxiliary Machinery Space (AMS).

June 6, 2018 The dust wipe sample results taken on May 31 were received. Some samples had excessive particulate to obtain sufficient sensitivity to confirm the samples was asbestos free. These locations were resampled. The dust wipe sample from the top of the port forward supply fan plenum in the stack returned with high concentration of asbestos structures. Access to the stack was restricted. There is no current known ACM in the stack. The asbestos containing insulation on the exhaust uptake was removed in the 1999 VLE at Victoria Shipyard. QM continued clean up work in the Gym and AMS. Preclean-up preparations work in MCR and ER.

June 7, 2018 Gym visual inspection and air clearance passed by NWE. QM continued cleaning in AMS. Preparations for cabin clean up started.

June 8, 2018 QM clean up in cabins and AMS continued. Ambient and occupational air samples while cleaning cabins show no cause for concern.

June 9, 2018 Air Clearance 3rd Officer's cabin (only one pump used so results are not conclusive, it did return acceptable). Cabins cleaning almost completed. AMS cleaning continued. ER cleaning held off since the stack will require cleaning and encapsulating prior to working on the ER.

June 10, 2018 AMS cleaning continued. Cabins passed visual inspection by NWE. Air clearance sampling performed on 3rd Officers, Senior Engineer's and Aft Oiler's Cabin. Cleaning by Starboard Watertight Door and deckhead cavity in progress. Lounge cleaning started.

June 11, 2018 Air clearance results for cabins received. Dust wipe sample results from deck spaces received. Winchroom access limited due to elevated readings. Trained ship's crew inspected cabins for bulkhead panel screw holes. Any holes sealed with silicone caulk. Fluorescent lighting on Upper and Poop deck which were open to deckhead cavity sealed.

June 12, 2018 AMS clean completed. Visual inspection passed by NWE. Air sampling underway. Scaffolding set up in the ER and stack in preparation for cleaning. Bridge cleaning preparations started.

June 13, 2018 Visual inspection planned for of the AMS.

Suspected Causes

Asbestos containing dust in locations not expected or previously identified.

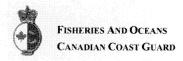
Theory for the source of source of contamination in the stack has been proposed as the expanded metal and porous (open) mineral wool insulation. The cladding and insulation is original and was not replaced when the asbestos containing exhaust uptake insulation was abated in the 1999 VLE at Victoria Shipyard. Over the 30 years from construction to removal, asbestos fibres released from the exhaust insulation may have embedded in the mineral wool. Through air movement and vessel vibration these fibres have shed coating surfaces inside the stack.

Incomplete identification and abatement of asbestos onboard. Previous abatement did not include removal/encapsulation of porous surfaces in close vicinity. Exposed mineral wool and bronze armored wire in cable trays may have prevented a thorough clean up. Subsequent air flow and vibration may have release previously embedded fibers. Some of the locations asbestos was found are inaccessible to normal cleaning. The deposits may have been from old work or poor workmanship during past remediation.

IIR

- -3rd Officer's Cabin Holes in ACM Bulkhead Lining Panel
 - -completed and sent in.
- -Aft Mast Ladder Wastage
 - -completed and sent in.
- -Asbestos Containing Dust

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PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

-started but at the request of Safety and Security it is to be sent in as one complete IIR not multiple parts. Saved in Chief Engineer's drive refit folder.

CCRs

- -Fire Panel Relocation CCR signed by Red Crew CO and CE.
- -Bridge Void Negative Pressure CCR signed by Red Crew CO and CE.

Maintenance

-MAINTelligence updated by Senior Engineer.

Logistics

Personnel & Admin

-Both Engineering Cadets will be transferring to operational vessels. Brendan to the Tully June 19. Jaxon transfer to TBD.

Miscellaneous

- -PS3 Blue-ray player in the Chief Engineer's cabin plugged in, firmware updated, and it is back operational.
- -Condemned Transcube disposed of in the scrap metal bin after receiving approval from Schnitzer Steel. Their only concern was being able to inspect the tank to ensure it did not contain fuel or oil.
- -high temp cutout switch on galley steamer replaced.

Required

- -Portlight glass for EDG door (13" OD, 34" wire reinforced) -email out to Freeman Marine.
- -INDUMAR and clamp type STOP-IT Patch Clamp
 - o p/n 110-0132-3 (1.5" pipe x 3")
 - o p/n 110-0238-3 (2" pipe X 3")
 - o p/n 110-0288-6 (2.5" pipe X 3")
- -M14 x 2.0 threaded inserts for Hatch Cover Dog pin bolts Western Equipment
- -4x 19-20 ANCO window wiper blades for port and starboard window wipers on bridge.
- -1 roll High Pressure Fuel Tape (Finning)

On Order

- -Heater 10kW 480 VAC Acklands
- -Maneuvering Shaft Bushings MAN (ME)
- -Refrigeration Cooling Pump + Seal Kits John Brooks Company Limited (ME)
- -Cargo Hold Hatch Springs replacements (last one used this patrol)
- -4x sounding tape refills (15' Chrome Clad/Nubian double duty, Lufkin) Fastenal
- -5 lifting diaphragm and 10 Non return valve VPC-V 034501705 Jetvac
- -2 Local control switch for WT doors (ME)
- -Plasma Cutter Consumables (Thermal Dynamics CutMaster 51): Praxair
- -Hand torch spares kit (5-0050)
- -1x 6" Duct Fans, 1x 10kW 480V 3ph Heater (Wire Leads) Acklands Grainger
- -Pre-lube pump Bearings Motion Canada
- -Electric Wheel and Potentiometers Jastram
- -ER Ventilation Silencers -DB Noise Reduction

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PATROL 18-03 RED

CHIEF ENGINEERS HAND-OVER NOTES

- -Boiler Safeties Serviced/Certified at Imperial Valve
- -Negative Air Machine Sycorp

s.19(1)

-Capstan Electric Motor - Servicing at Emery

Received

- -5 barrels TELUS 46 and 5 pails of Omalla 68 Columbia Fuels
- -Box of Provo Wallis Lips CPP parts Dartmouth Coast Guard Base
- -Gasoline transfer pump motor Emery
- -Sterntube cooling pump motor -Emery
- -Derrick Avtron Drive Bridge Interface Board x2 Avtron DC0280-4DN3-C and fuse holders
- -1x bag of Fine Gravel, ¼" 1/8" mesh Cullen Water Systems
- -1 gallon of D-1 and 1 Gallon of D-2 Lifstream (Depot)
- -1 explosion proof hand lamp F1755-18-0091
- -Zinc bars for Anode 12' x ½" 6' x ¾" 6' x 3/8" Metal Supermarket Victoria
- -Nextsand media, 2 cu/ft Cullen Water Systems
- -Filters (6x BF7915)(6x G1 Fuel Filter)(6x BF7156) Greenline/Coast Industrial
- -2x Case of Zaal Noflex digester Jetvac
- -HVAC Fan Impeller Canadian Blower
- -CO2 Strobe/Alarms and Box for Spares (2x P4RKA-R, 1xSA-WBB) Westburne
- -5L of Viscor Injector Calibration Fluid Wilson and Proctor
- -Drum Cover, Magicwipes, etc Acklands Grainger
- -HVAC Fan motor (ME) Emery Electric
- -50' Welding Extension Cord 240V Praxair
- -Allpax Gasket Cutter centre pins, blades, and cutting board. NE Seals
- -Felt Seals for Bridge Sliding Window NE Seals
- -2 AMTROL WX-252 pressure water tanks ANDREW SHERET LIMITED (ME) IN TYPE II STORES
- -Sewage Overflow pump shaft and shaft's key Jetvac (ME)
- -UPS Batteries Canadian Energy

Chief Engineer – White Crew
Chief Engineer – Red Crew
Matt Jackson

581-888-7203 (EST: 3 hours ahead)

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: June-13-18 6:40 PM

To: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC,

Bartlett Engine Room; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Chief

Officer

Subject: Asbestos IIR Draft

Attachments: Asbestos Containing Dust.pdf; Work Log May 15- June 13, 2018.docx

Importance: High

Follow Up Flag: Follow up Flag Status: Flagged

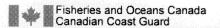
All. Please see attached Asbestos IIR Draft Asbestos Work Log attached too. We will have to update these documents regularly.

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB



INCIDENT INVESTIGATION REPORT (IIR) 9.B.1 NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence. A. Type of Incident (Required) (Choose only one) Disabling Injury (visit to medical professional, time lost) Loss of Consciousness due to electric shock or toxic atmosphere First Aid Near Miss Minor Injury (visit to medical professional, no time lost) Pollution Activation of an Emergency Procedure Property Damage Fire or Explosion (Shore only) □ Unsatisfactory Condition Other (specify) **B.** General Information (Required) Employer's (Department) Name Site/Vessel Name (and official number) Canadian Coast Guard **CCGS Bartlett** Date of Report (YYYY-MM-DD) 2018-06-13 Mailing Address 25 Huron Street Victoria BC V8V 4V9 Name of Responsible Supervisor Captain Supervisor's Telephone # 250-213-3685 Organization (Select One) ☐ National HQ Coast Guard College Region (if selected, choose Directorate and Program/Branch below) Regional Directorate (Select One) ☐ AC's Office ☐ Fleet ☐ IBMS ☐ ITS Incident Management ☐ Navigational Programs Program/Branch (Select One) ☐ AtoN MarSup Refit and Maintenance ☐ Canso □ ROC ☐ MCI □ CGSS ☐ MCTS □ SAR □ E&I **□** ME ☐ Science ☐ EFM (C&P) MNS ☐ ER ☐ MSET Other ☐ Ice Ops Business ∏ ILS C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed. Surname Given Name Initial(s) Age Gender Job Title Years of experience in current □ Female □Male position **Employment Status** Indeterminate Term Casual/Relief Program Client Student ☐ Contractor Other (Specify)

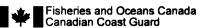


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			oi sur l'accès à l'	W/	
Fisheries and Oceans Canada Canadian Coast Guard					
D. Incident Information (Required)					
Did this involve a motor vehicle* accident?		es, please ensure the	Motor Vehicle Accide	nt (MVA) Report is	
Did this involve Helicopter Operations?	— — com	pleted. this incident involve Si	mall Craft Operations	? Yes □ No ▷	
Location of Incident (include geographical		+	<u>·</u>		
Secured alongside Victoria Coast Guard E		-,,			
Date of Incident (YYYY-MM-DD) 2018-05-	7Q	Time of Incident (Loc	cal) 10:17		
Body part injured (if applicable)		Time of moderit (Lot	Jai) 10.17		
Abdomen Back	☐ Eye	Neck	☐ Knee	Pelvis / Groin	
☐ Arm ☐ Body System / Int	 •	☐ Head	Leg	☐ Shoulder	
Auditory Chest	☐ Hand	☐ Hip	☐ Multiple injuries	Unknown	
Nature of injury (if known)	<u></u>				
Burns		☐ Multiple Injuries			
_ Fractures	☐ Traumatic joint/ligament and muscle/tendon injury				
☐ Injury to Nerves and Spinal Cord			ions and Amputations	1	
☐ Intracranial Injury		Unknown			
. Investigation Information (Required)					
ype of Event	* -			· · ·	
Caught in or between	Exposure to a tra	umatic event	☐ Slips, trips and fa	ulls	
Contact with harmful substance	☐ Mechanical/Equi	oment Failure	☐ Struck by or agai	nst	
Exposure to Electricity	☐ Mechanism of ha	rm unknown	☐ Vehicle incident		
Exposure to Fire Overexertion			☑ Other (specify)		
Exposure to heat/cold	☐ Repetitive Motion	1	S other (specify)		
Exposure to noise	<u> </u>		Unknown dust identified as containing Asbestos		
Description of Incident - Sequence of Ever		sheets, chart(let)s, dia	grams, location of an	y failed or damaged	
May 15-17, 2018 - Prior to the alongside of conducted by Northwest Environmental Graterials, paint chip samples testing for lethe Wheelhouse Console ACM Dust IIR Properties of the TEM dust on the TEM dust in dust were reported. NWE: "Asbestos Codependent on several factors including implicated to the surface trays in machinery spaces, top of ventilation on top of control cabinets. Positive resexpected to remove all asbestos containing Engineering, Regional Operations Center,	ontracted self-refit peroup (NWE). The surad and Transmission atrol 17-12. The bulk canadian Maritime Enter the set wipe samples were oncentrations in dust pact/disturbance of the by an oily/greasy film on ducts, above deckledts inside the consorg dust. Upon receiving	vey included bulk sam Electron Microscopy (sampling and paint of gineering (CME). received. Varying level has no correlation to the dust due to direct control to the due to	pling of suspected as (TEM) dust wipe sampling were to the sampling were to the concentration in the concentration in the concentration in the commodations, inside the cleanup in Februal sbestos in the latent of	bestos containing oles as a follow up to aken to cover the ures contamination e air. This is on.". Some of the essible: above cable le control consoles ry 2018 was not dust Marine	

May 31, 2018 - Air sampling was performed by NWE in the locations which dust wipe samples results returned positive for asbestos. Results from the air sampling received were below either the limit of quantitation or detection. Additional dust wipe samples were taken to determine the extent and source of the asbestos dust contamination.

Meeting to determine the scope of work required and way to move forward with the clean up include the following parties:



- CCG ITS Marine Engineering (ME), Vessel Maintenance Manager (VMM)
- CCGS Bartlett Engineering Department Chief and Senior
- CCG Safety and Security, Manager
- Public Works Contracting Officer
- Canadian Maritime Engineering (CME) Primary Contractor
- Emery Electric Limited subcontracted by CME for electrical work
- Northwest Environmental Group asbestos consultants
- Quantum Murray Environmental remediation company

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June 13, 2018 Visual inspection of the AMS.

Reports attached:

- -Limited Hazardous Materials assessment CCGS Bartlett
- -NWE Bulk Sample Report
- -iATL dust wipe sample results for wipes taken May 15-17, 2018
- -NWE air sample results May 31, 2018
- -NWE scope of work for Dust Clean-up in Compartments on the CCGS Bartlett: June 2018 Draft
- -ESML dust wipe sample results for wipes taken May 31, 2018
- -iATL dust wipe sample results for wipes taken June 6, 2018
- -NWE air sample results (last set so it covers the overall project)

NWE Air/visual clearance documents yet to be received.



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- A -	Fisheries and Oceans Canada
T	Fisheries and Oceans Canada Canadian Coast Guard

Man a Diala Assessment and an admirat a second and a	Al-A-IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				
Was a Risk Assessment performed prior to commencement of	the task which resulted in the incident?	⊠Yes			
Specify					
The initial investigation into the Hazardous Materials on-board contracted refit period. This survey was conducted by Northw	was part of the risk assessment process prior to t est Environmental starting on May 15 and finished	he alongs on May1	side 7.		
Was accident prevention training provided in relation to the dut	ies of the injured employee prior to the incident?	Yes	Ø١		
Specify					
F. Immediate/Direct Causes (Required) (Check all that apply)				
Substandard Actions	Substandard Conditions				
Bypassing safety devices	☐Congested or restricted area				
Failure to check or monitor	☐Defective tools, equipment or materials				
Failure to communicate/coordinate	☐ Excessive noise				
Failure to follow procedure/policy	Heat/cold exposure				
☑Failure to identify hazard/risk	☐ Inadequate/improper PPE or use of PPE				
Failure to react/correct	☐Inadequate communication				
Failure to service equipment properly	☐ Inadequate guards or barriers				
Failure to use PPE	☐Inadequate information/data				
Failure to warn or secure	☐ Inadequate instruction/procedure				
Horseplay	☐ Inadequate preparation/planning				
Improper lifting	☐Inadequate support/assistance				
Improper loading, placing, mixing	☐ Inadequate ventilation				
Improper position/posture for task	☐Inadequate warning system				
Operating at improper speed	Lack of tools, equipment or materials				
Using defective equipment	Poor housekeeping				
Using equipment improperly					
Other action (Specify)	Radiation exposure				
	Uneven ground/terrain				
	∐ Weather or environmental conditions				
	Other condition (Specify)				
mmediate/Direct Causes (Required)					
Of the above checked immediate/direct causes provide details	as to which one was the leading cause of the inci-	dent.			
Asbestos containing dust in locations not expected or previous Theory for the source of source of contamination in the stack homineral wool insulation. The cladding and insulation is original uptake insulation was abated in the 1999 VLE at Victoria Shipy fibres released from the exhaust insulation may have embedded wibration these fibres have shed coating surfaces inside the states.	has been proposed as the expanded metal and poil and was not replaced when the asbestos contain yard. Over the 30 years from construction to removed in the mineral wool. Through air movement and	ing exhau val, asbe	ıst		

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Fisheries and Oceans Canadian Coast Guard	ada				
G. Basic/Root Causes (Require	ed) (Check all that apply	y)			
Personal Factors			Job Factors		
Emotional stress			Abuse or misuse of equip	pment	
Fatigue			☐Inadequate engineering or design		
Lack of knowledge and/or skill			⊠Inadequate hazard asses	ssment	
Physical stress or capability			☐Inadequate personnel to complete task		
Rushing or inattention			☐Inadequate tools/equipment/materials		
Other (Specify)			☐Inadequate training and/or familiarization		
			│		
			Lack of enforcement of procedure or supervision		
			Standards/procedures not developed		
			☐Wear and tear		
			Other (Specify)		
Basic/Root Causes (Required)					
Of the above checked Basic/Roo	ot causes provide details	s as to w	hich one was the leading car	use of the in	cident.
ncomplete identification and aba porous surfaces in close vicinity.	Exposed mineral wool	and bro	nze armored wire in cable tra	ays may hav	re prevented a thorough
clean up. Subsequent air flow au found are inaccessible to normal					
remediation.	orcarming. The deposits	s may ne	ave been from old work or po-	or workingin	silip during past
H. Witnesses (As Required) (No information)	OTE: Witness statements i	may be re	equired depending on the severi	ty of the incid	ent - Attach all additional
Name of Witness # 1	Telephone #		Name of Witness # 3		Telephone #
Matthew Jackson CE	25-882-1273		Mike McCullagh CO		250-882-3864
Name of Witness # 2	Telephone #		Name of Witness # 4	of Witness # 4	
Steve Buss SE					
I. Property / Equipment Damag	e (As Required)				
Nature and extent of property damage				Estimated Cost (\$)	
Property damage inconsequential compared to health risk.					
J. Corrective & Preventative Morecurrence)	easures (Required) (De	escribe (corrective measures taken an	nd/or recomi	mended to prevent
Dust wipe samples to be followe Air sampling pumps purchased tensure crew safety.	by Marine Engineering f	for vesse	el to perform at sea sampling.	Ū	, ,
Asbestos Management Plan and			tions and work procedures w	ill need dev	elopment to ensure safe
work procedures are employed w			an annaithta		
Asbestos Awareness and Abatel Future abatement projects to inc					
III didire abatement projects to inc	adde removal of porous	Junaue:	s willon can not be dealled.		
Corrective action responsibility assigned to Date to be completed (YYYY-MM			be completed (YYYY-MM-DD)	Follow-up	Date (YYYY-MM-DD)



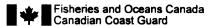
Chief Engineer/Marine Engineering/Training

K. Investigation Completed By (Required) Name of person investigating Title Chief Engineer Date (YYYY-MM-DD) Email address BartlettCE@ccgs-ngcc-gc.ca Investigators comments L. Workplace OHS Committee / Health and Safety Representative Participation (Required) Workplace OHS Committee Member / Health and Safety Representative Information Name Telephone # Signature 250-213-3685 Title Email address Date (YYYY-MM-DD)	Canadia	n Coast Guard				
Title Chief Engineer L. Workplace OHS Committee / Health and Safety Representative Participation (Required) Workplace OHS Committee Member / Health and Safety Representative Information Name Telephone # Signature 250-213-3685 Title Email address bartlettSE@ccgs-ngcc.gc.ca Workplace OHS Committee Member/Health and Safety Representative Information Name Telephone # Signature 250-213-3685 Title Email address bartlettSE@ccgs-ngcc.gc.ca Workplace OHS Committee Member/Health and Safety Representative comments M. Commanding Officer or Superintendent/Manager (Required) Name of Commanding Officer / Responsible Manager Telephone # Signature 250-882-3864 Title Email address Date (YYYY-MM-DD) Date (YYYY-MM-DD) Email address Date (YYYY-MM-DD) Date (YYY-MM-DD) Date (YYYY-MM-DD) Date (YYY-MM-DD) Date (YYYY-MM-DD) Date (YYYY-MM-DD) Date (YYYY-MM-DD) Date (YYYY-MM-DD) Date (YYY-MM-DD) Date	K. Investigation	n Completed By (Required)				
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Investigators comments L. Workplace OHS Committee / Health and Safety Representative Participation (Required) Workplace OHS Committee Member / Health and Safety Representative Information Name Telephone # [250-213-3685] Title Email address bartlettSE@ccgs-ngcc.gc.ca Workplace OHS Committee Member/Health and Safety Representative comments Workplace OHS Committee Member/Health and Safety Representative comments W. Commanding Officer or Superintendent/Manager (Required) Name of Commanding Officer / Responsible Manager [250-882-3864] Title Email address Date (\(\text{Presentative Comments} \) Date (\(\text{Presentative Comments} \) Telephone # [250-882-3864] Title Commanding Officer Date (\(\text{Presentative Comments} \) Title Commanding Officer Date (\(\text{Presentative Comments} \) Title Commanding Officer Date (\(\text{Presentative Comments} \) Title Commanding Officer Date (\(\text{Presentative Comments} \) Date (\(Presentative C	Title Chief Eng	ineer		Date (YYYY	′-MM-DD)	
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Title Email address bartlettSE@ccgs-ngcc.gc.ca Workplace OHS Committee Member/Health and Safety Representative comments M. Commanding Officer or Superintendent/Manager (Required) Name of Commanding Officer / Responsible Manager Telephone # Signature 250-882-3864 Title Email address Date (YYYY-MM-DD) Commanding Officer Email address Date (YYYY-MM-DD) bartlettCO@ccgs-ngcc-gc.ca	Workplace OHS	Committee Member / Health and Sa		· · ·	mation	
Title	Name				Signature	
Senior Engineer bartlettSE@ccgs-ngcc.gc.ca	<u> </u>		250-213-36	885		
Workplace OHS Committee Member/Health and Safety Representative comments M. Commanding Officer or Superintendent/Manager (Required) Name of Commanding Officer / Responsible Manager Telephone # Signature 250-882-3864 Title Email address Date (YYYY-MM-DD) Commanding Officer bartlettCO@ccgs-ngcc-gc.ca Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? Yes Note that the selection of the site of the	Title		Email addr	ess		Date (YYYY-MM-DD)
M. Commanding Officer or Superintendent/Manager (Required) Name of Commanding Officer / Responsible Manager Telephone # Signature 250-882-3864 Title Email address Date (YYYY-MM-DD) Commanding Officer bartlettCO@ccgs-ngcc-gc.ca Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? Yes No	Senior Enginee	er	bartlettSE@	Occgs-ngcc.	jc.ca	
Name of Commanding Officer / Responsible Manager Telephone # 250-882-3864	Workplace OHS	S Committee Member/Health and Sat	ety Represe	entative comr	ments	
Name of Commanding Officer / Responsible Manager Telephone # 250-882-3864						
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Title Email address Date (YYYY-MM-DD) Commanding Officer bartlettCO@ccgs-ngcc-gc.ca Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident? Yes No	M. Commandin	g Officer or Superintendent/Manag	er (Require	ed)		
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Commanding Officer bartlettCO@ccgs-ngcc-gc.ca Yes No			\ <u></u>			
Has the relevant task(s) on the Site Specific Risk Register been reviewed and/or modified as a result of the incident?			250-88			
	Title			2-3864		Date (YYYY-MM-DD)
Additional comments to include additions, deletions or changes to corrective action recommendations from Section "I"		Officer	Email	2-3864 address	gcc-gc.ca	Date (YYYY-MM-DD)
Additional comments to moidade additions, deletions of changes to corrective action recommendations from occitor.	Commanding C		Email a	2-3864 address CO@ccgs-ng		
	Commanding C	task(s) on the Site Specific Risk Registe	Email a bartlett	2-3864 address CO@ccgs-noved and/or mo	odified as a result of the incide	nt?
	Commanding C	task(s) on the Site Specific Risk Registe	Email a bartlett	2-3864 address CO@ccgs-noved and/or mo	odified as a result of the incide	nt?
	Commanding C	task(s) on the Site Specific Risk Registe	Email a bartlett	2-3864 address CO@ccgs-noved and/or mo	odified as a result of the incide	nt?
	Commanding C	task(s) on the Site Specific Risk Registe	Email a bartlett	2-3864 address CO@ccgs-noved and/or mo	odified as a result of the incide	nt?

Privacy Notice

Fisheries and Oceans Canada

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and



the Canada Labour Code for the purpose of documenting hazardous occurrences.

The information is used to administer the Coast Guard Safety and Security (CGSS) occupational health and safety program, including the promotion of a safe, healthy workplace and injury awareness and prevention. The information may be used and disclosed for purposes outlined in the following Personal Information Banks found in Information about programs and information holdings: Occupational Health and Safety PSE 907 and Vehicle, Ship, Boat and Aircraft Accidents PSE 908.

Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

Individuals have the right to the correction of, access to, and protection of, their personal information under the <u>Privacy Act</u> and to file a complaint with the Privacy Commissioner of Canada over DFO's handling of their information. For more information contact the DFO ATIP Secretariat at: <u>DFOprivacy-viepriveeMPO@dfo-mpo.gc.ca</u>.



1.1 ASBESTOS RELATED WORK LOG

As per sections 1.6, 1.7 and Appendix E, enter the work log in this section.

Location		MOA	ACM Work	*	Jod trong
+	ACIVI	\neg	ACIVI WORK	Kesuit	Keport Ket.
Wheelhouse Dust Test Consoles NWE	Dust Test NWE		Testing dust in vicinity to ACM wiring.	Inconclusive as laboratory performed incorrect test.	No report
Laundry Cracked Room Bulkhead Lining Panel	ler		Clean up of possible ACM debris and encapsulate exposed cracked edges.	Air test proved good. Dust test behind washing machines showed moderate contamination. Space remained closed.	NWE 34659 IATL 556407
Wheelhouse Dust Test R Consoles NWE vi	Fest	∞ ≥	Resampling of dust in vicinity to ACM wiring.	High contamination found. Consoles remained off limits.	IATL 556407
ER/MCR Thermocoupl B e extension wire and gland packing storage		ш	Bulk sampling	30% Chrysotile asbestos in thermocouple extension and at least one sample of packing.	NWE 34694
Various Air sampling A Locations Dust Test B (ER/MCR/HV P AC return)		A B	Air Sampling as per NWE Background Sampling proposal	Air sample results below the limit of detection and quantification. Dust Test: Held up at customs. See Feb 8, 2018 resampling	NWE 34694 No dust report.

Visual inspection passed by NWE. Air Clearance passed. ASB ACD3 V1.0 – CCGS Bartlett – Document Received from NWE. MCR Stores and MCR Console.docx	Visual inspection passed by NWE. Air Clearance passed. ASB ACD3 V1.0 – CGGS Bartlett – Document Received from NWE. MCR Stores and MCR Console.docx	Visual inspection passed by NWE. Air NWE 34699 clearance passed. Asbestos Air and Visual Clearance CCGS Bartlett – Document Received from NWE. Wheelhouse.docx
Visual inspection passed by NW clearance passed. Asbestos Air and Visual Clearan Document Received from NWE.	Visual inspection passed by NW clearance passed. Asbestos Air and Visual Clearan Document Received from NWE.	Visual inspection passed by NW clearance passed. Asbestos Air and Visual Clearan Document Received from NWE.
Disposal of packing and cleaning the adjacent area. Risk Assessment and Safe Work Procedures developed by NEW. 34699 RA V 1.0	Cut bag removal of wire and dust cleanup of MCR console. Risk Assessment and Safe Work Procedures developed by NEW. 34699 RA V 1.0	Dust clean up. Open porous mineral wool insulation removed as it cannot be cleaned. Risk Assessment and Safe Work Procedures
Old packing stored in cardboard box.	Old ACM thermocouple extension wire and dust in MCR console	Dust present in void space with open transits to wheelhouse consoles
MCR STBD	MCR/ER	Wheelhouse Void Space
Feb 6, 2018	Feb 6, 2018	Feb 7-8,

iATL 34694			
HVAC and 3 of 4 samples from ER returned low or none detected. MCR console sample returned moderate, this was directly below the ACM wire removals. Area was wet wiped after sample taken. Space passed air clearance. As per NWE	recommendation console top HEPA vacuumed. One sample taken from ER in an inaccessible place returned elevated. Air testing was performed in ER during engine operation and returned clear. Recommendations from NWE: "Regarding the Engine	Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and	corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source. At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer." Follow up sampling to be conducted upon return to Victoria. Defect
Follow up dust sampling as part of Background Asbestos Testing Proposal NWE			
Dust Test (ER/MCR/HV AC return)			
Various Locations			
Feb 8, 2018			

Feb 9, 2018	Various Locations	Air Sampling	Air Sampling	Sampling air while underway to recreate normal operating vibration and movement. NWE: "We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits."	NWE 34741 #1A -11A
Feb 9, 2018	Various ACM Bulkhead Lining Panels	Bulkhead Lining Panels	Deck crew performed thorough inspection of accommodations ACM bulkhead lining panels. Caulking minor splits in previously silicone joints.	Repairs performed after consultation with NWE. Followed precautions advised by NWE Half face respirator P100 cartridge, clean shaven with valid fit test, hepa vacuum seam and area below. Apply silicone. No visible debris noted at any of the locations.	No report.
May 15-17, 2018	Various Location	ACM Sampling for pre-refit risk analysis	Bulk sampling of suspected ACM. TEM dusts wipe samples.	Bulk samples returned with no asbestos detected. Dust samples returned with varying levels of contamination.	NWE 202314 iATL 564091
May 28, 2018	Bridge Void	No ACM work. Work performed on void space.	Manhole cover removed for modification for HEPA filtered exhaust fan. Void space sealed with poly and tape.	Work performed by trained ship's crew. Space sealed with poly and marked as asbestos hazard.	No report.

May 31,	Various Locations	Follow-up of pre-refit RA	Air Sampling TEM dust wipes samples.	Air sampling in locations where AC dust contamination was detected.	NWE 35254 1A- 9A
2018		testing		MCR and AMS samples were overloaded by welding and paint particulate. Work was stopped and the sample restarted. All air samples are below the	EMSL 551806441
				Dust samples returned with contamination in three locations. Stack, 3 rd Officer's Cabin and Hospital. Stack contamination high – access restricted.	
June 5,6,7 2018	Cargo Hold - Gym	AC dust	Clean up of AC dust, work performed by Quantum Murray with oversight by NWE.	Air clearance and visual inspection passed by NWE.	Air clearance: NWE 35254-17A and 18A
June 6, 2018	Various Locations	Follow-up from May 31 sampling	Excessive particulate prevent analysis but indication no asbestos fibers detected. Foc'sle, winch room and hold samples retaken.	Varying levels of contamination. Winch room access restricted upon receiving results.	IATL 565543
June 6- 12, 2018	AMS	AC dust	Cleanup of AC dust, work performed by Quantum Murray with oversight by NWE.	Visual inspection passed by NWE. Air clearance underway.	

No report.	No report.	
PJSA completed and filed in VSAMP. Bridge to be cleaned by Quantum Murray after crews work.	PJSA completed and filed VSAMP. Bridge to be cleaned by Quantum Murray after crews work.	Work performed by ship's crew. Follow cleaning of cabin performed by Quantum Murray.
Removal of doors in preparation to fit Fire Detection system insert panel. Moderate Risk procedures used and work performed by Ship's Crew.	Fire detection system panel removed and vacuumed and wet wiped. Fire panel insert installed. Cleaned Fire panel installed in insert and system power up. Moderate Risk procedures used and work performed by Ship's Crew.	Follow-up inspection from asbestos dust test result found seven holes within 24" of the dust wipe samples location. Moderate Risk procedures used to clean bulkhead and deck below the holes. Holes sealed with silicone caulk.
No ACM work, but work performed in with console doors open.	No ACM work. Fire detection system panel cleaning.	Holes found in Marinite Bulkhead Lining Panel
Wheelhouse Fire Detection System Console	Wheelhouse Fire Detection System Console	3 rd Officers Cabin
June 6, 2018	June 7, 2018	June 7, 2018

		1	
Air clearance NWE 35254 samples 29A-34A	No report.		No report.
Visual inspection passed by NWE. 3 Cabins chosen as samples for air sample testing. 3 rd Officer's (due to ACM bulkhead damage) Senior Engineer and Aft Oiler's cabin. Air clearance passed. 6 TEM dust wipe samples taken.	Work performed by trained crew members.		PJSA completed and filed VSAMP. Work performed by trained crew members after direction from NWE on work procedure.
Cabins HEPA vacuumed and wet wiped. Work performed by Quantum Murray with oversight by NWE.	Manhole cover reinstalled with new gasket.	Accessible dust cleaned by Quantum Murray with oversight by NWE.	Blanking plate installed in place of unused cabinet filter (outboard).
Precautionary cleaning of cabin dust incase contamination was tracked in.	No ACM work. Work performed on void space.	AC dust	No ACM work. Work performed on BT Cabinet.
Cabins	Bridge Void	Stbd Upper Deck Watertight Door	Gym
June 7- 11, 2018	June 9, 2018	June 10, 2018	June 10, 2018

June 11, 2018	Cabins	ACM bulkheads	Cabin inspection performed to find and seal screw holes to AC bulkhead lining panels. Aluminum foil tape applied to openings in old fluorescent light fixtures openings to deck head cavity.	Open screw holes sealed with silicone caulk. Work performed by trained crew members.	No report.
June 6- 12, 2018	MCR	AC Dust	Prep work by Quantum Murray with oversight by NWE. Cleanup work not started.		
June 6- 12, 2018	ER including Stack	AC Dust	Prep work by Quantum Murray and Industrial Scaffolding with oversight by NWE. Cleanup work not started.		
June 11-12, 2018	Lounge	Precautionary cleaning of dust incase contamination was tracked in.	Lounge HEPA vacuumed and wet wiped. Work performed by Quantum Murray with oversight by NWE.	Visual inspection completed by NWE. Air clearance underway	
June 12, 2018	Wheelhouse	AC Dust	Prep work by Quantum Murray with oversight by NWE. Cleanup work not started.		

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No information has been removed or severed from this page

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

June 14, 2018 6:20 AM

To:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room

Subject:

FW: Bartlett Results - May 29th 2018

Attachments:

image001.png; 35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1

V1.0 2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: May-29-18 4:45 PM

To: 'Rosco Mac'

Subject: FW: Bartlett Results

Hi Ross,

Sorry to bother you on your off-cycle but I want to include you in the asbestos sampling results and remediation plans. It looks like we have asbestos dust in various locations from the sampling that was performed at crew change. At present, I don't know what to say... some are in locations which make tracking the source of the dust difficult (the only thought I have is previous abatement of pipe insulation or wear and tear prior to abatement).

It might be from previous remediation or work performed in the distant past when precautions were not followed/taken as seriously as they are today.

NWE, Marine Engineering, CME, and Quantum Murray (CME abatement company) are going to attend the ship tomorrow and maybe Thursday to develop a plan.

Given the scale of the results and locations found I doubt the time period scheduled for this refit will be sufficient to complete the work required.

The RD Fleet, Roc, Fleet Safety and Security, Superintendent of Marine Engineering(including Deputy) have already been briefed and are part of the plans going forward.

I will keep you in the loop.

Regards

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: May-29-18 10:17 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: Fw: Bartlett Results



I'll look over these and we can talk in the afternoon. We can meet with NWE onboard tomorrow if you think we should.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From:

Sent: Tuesday, May 29, 2018 10:01

To: Chaikin, Gabriel

Cc:

Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

- 1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
- 2. Moderate range (> 10,000 50,000 s/cm2):
 - a. Bridge mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck stb aft alleyway deckhead cavity
 - e. N bridge deck bridge deckhead cavity
- 3. Elevated range (> 50,000 100,000 s/cm2):
 - a. Bridge fwd/port console
 - b. Bridge Fwd middle console
 - c. MCR port side top of ducting
 - d. Upper deck aft oilers cabin deckhead cavity
 - e. Gym top of electrical cabinet
- 4. High range (> 100,000 s/cm2):
 - a. Bridge fire panel console (mid port console)
 - b. AMS wireway above sewage tank
 - c. MER wireway adj. escape hatch
 - d. Upper deck stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting leadcontaining paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



Project Manager North West Environmental Group Ltd.

From:

Sent: May 29, 2018 8:43 AM

To: 'Chaikin, Gabriel' <Gabriel.Chaikin@dfo-mpo.gc.ca>;

Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent – pending any emergencies we should be able to send it out around noon. I'll keep you updated.

Thanks for your patience,



Project Manager North West Environmental Group Ltd.

From: Chaikin, Gabriel < Gabriel. Chaikin@dfo-mpo.gc.ca >

Sent: May 29, 2018 8:15 AM

To:

Subject: Bartlett Results

Good day and

We are hoping to have the results of our dust wipes in order to proceed with our projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.

Pages 1195 to / à 1216
are duplicates of
sont des duplicatas des
pages 1072 to / à 1093



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.:

564104 - Lead Paint

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Paint

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

Insufficient sample provided to perform QC reanalysis (<200 mg)

Not enough sample provided to analyze (<50 mg)

*** Matrix / substrate interference possible.

Dated: 5/28/2018 4:18:37

Labelle-Rice, Roxane

From:

Richardson, John

Sent:

June-15-18 3:18 PM

To:

Harvey, Clifford FW: Bartlett Results

Subject: Attachments:

35254 AB1 V1.0 2018-05-17 - CCGS Bartlett S#1-9.pdf; 35254 ABWIPE1 V1.0

2018-05-17 - iATL 56409.pdf; 35254 Pb1 V1.0 2018-05-17 - iATL 564104.pdf

FYI

From: DeAngelis, Vincenzo **Sent:** 2018–May-30 6:55 AM

To: Richardson, John **Cc:** Harvey, Clifford

Subject: FW: Bartlett Results

John,

Please see attached. Let's discuss when you are back in the office next week.

Best Regards,

Vince

Vince De Angelis
Marine Engineering | Ingénierie Navale
Integrated Technical Services | Services Techniques Intégrés
Canadian Coast Guard | Garde Côtière Canadienne
200 Kent Street, Office | Bureau 7W077
Ottawa, ON, K1A 0E6
vincenzo.deangelis@dfo-mpo.gc.ca
Telephone | Téléphone 613-219-2733

From: Ivany, Gary

Sent: Tuesday, May 29, 2018 3:54 PM

To: Harvey, Clifford <Clifford.Harvey@dfo-mpo.gc.ca>; DeAngelis, Vincenzo <Vincenzo.DeAngelis@dfo-mpo.gc.ca>

Cc: Ryan, Sam <Sam.Ryan@dfo-mpo.gc.ca>

Subject: Fw: Bartlett Results

Fyi

Gary

Sent from my BlackBerry 10 smartphone on the Bell network.

From: McNish, Joanne < Joanne. McNish@dfo-mpo.qc.ca>

Sent: Tuesday, May 29, 2018 3:51 PM

To: Ivany, Gary; Lick, Gregory **Cc:** Hunt, Cliff; Ormiston, Glenn **Subject:** Fw: Bartlett Results

Gary/Greg,

Fyi.

Glenn will have the details from what unfolds today, but wanted to advise prior to our F2F. My concern is the crew will loose confidence that we are adequately mitigating risk of asbestos, despite the progressive steps we've taken to date..

We should discuss if it is worthwhile to get a second assessment?

Joanne

Sent by BB

From: CCGS-NGCC, Bartlett Captain < BartlettCO@ccgs-ngcc.gc.ca>

Sent: Tuesday, May 29, 2018 1:57 PM

To: McNish, Joanne

Cc: Western ROC Superintendent Surintendant ROC Ouest (DFO/MPO); CCGS-NGCC, Bartlett Chief Engineer

Subject: FW: Bartlett Results

Joanne;

Attached is an asbestos results report from wipe samples taken by North West Environmental at the onset of this refit.

Of concern are the elevated and high results in some areas.

We do not have the knowledge or skills to address these levels, so have asked Marine Engineering to invite North West to come down to the ship and advise on mitigation measures.

Is there an Asbestos Advisory Group in Ottawa whose experts can advise on a strategy moving forward?

Chief Engineer Jackson and myself can come up to discuss if you have some time.

Mike

Captain Mike McCullagh
Commanding Officer, CCGS Bartlett
Email: BartlettCO@bar.ccgs-ngcc.gc.ca

Cell:

Tellular: 250.213.3685

Victoria CG Base Landline: 250.480.2692

Irridium Voice: Irridium Data:

Mailing Address:

25 Huron Street Victoria BC V8V 4V9

Government Gouvernemer of Canada du Canada

Canada

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: May-29-18 10:24 AM

To: CCGS-NGCC, Bartlett Captain **Subject:** FW: Bartlett Results

Asbestos and lead paint test results from pre-refit sampling arranged by WC.

Matt Jackson Chief Engineer CCGS Bartlett

Cell: 250.882.1273 BartlettCE@ccgs-ngcc.gc.ca

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: May-29-18 10:17 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: Fw: Bartlett Results

Matt,

I'll look over these and we can talk in the afternoon. We can meet with NWE onboard tomorrow if you think we should.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: J

Sent: Tuesday, May 29, 2018 10:01

To: Chaikin, Gabriel

Cc:

Subject: RE: Bartlett Results

Hi Gabe, we've received the asbestos wipe and lead paint analysis. Please review and let's discuss at your convenience.

Bulk Asbestos

Asbestos was not detected in the samples collected. Note, we were unable to collect representative samples of the gaskets due to accessibility. Gaskets should be treated as asbestos-containing until they can be fully tested.

Asbestos wipes

- 1. The following areas were found to have results within the expected range (1-10,000 structures/cm2):
 - a. Bridge fwd stb console
 - b. MCR Port side wireway adj. switch console
 - c. Poop deck (p-2) logistics office deckhead cavity
 - d. N bridge deck (N-5) cadet cabin deckhead cavity
 - e. MER aft port metal plate beneath wireway
- 2. Moderate range (> 10,000 50,000 s/cm2):
 - a. Bridge mid stb console
 - b. MCR console
 - c. MCR top of console
 - d. Upper deck stb aft alleyway deckhead cavity

s.16(2)

s.19(1)

- e. N bridge deck bridge deckhead cavity
- 3. Elevated range (> 50,000 100,000 s/cm2):
 - a. Bridge fwd/port console
 - b. Bridge Fwd middle console
 - c. MCR port side top of ducting
 - d. Upper deck aft oilers cabin deckhead cavity
 - e. Gym top of electrical cabinet
- 4. High range (> 100,000 s/cm2):
 - a. Bridge fire panel console (mid port console)
 - b. AMS wireway above sewage tank
 - c. MER wireway adj. escape hatch
 - d. Upper deck stbd aft watertight door deckhead cavity

There is a range of results for each main areas sampled. Some areas, such as the Bridge consoles, were cleaned of accessible dust earlier this year. It was known at that time that not all dust would be removed due to accessibility issues. It appears that the current results are much less than the initial wipe samples. Note that the number of structures in dust does not necessarily correlate to the concentration of fibres in the air.

Lead Paint

Paints and coatings contain lead. Two samples (10 and 12) are below the limit of detection for the specific samples analysed. Since none of the results are zero, treat all paints and coatings as lead-containing. Any work impacting leadcontaining paints and coatings must be conducted in a manner that minimizes dust and vapour creation and dispersion.

Best,



Project Manager North West Environmental Group Ltd.

C. (Primary)

From:

Sent: May 29, 2018 8:43 AM

To: 'Chaikin, Gabriel' < Gabriel. Chaikin@dfo-mpo.gc.ca>; J

Subject: RE: Bartlett Results

Hi Gabe, sorry for the delay. We have the results and I'm in the process of compiling a summary now then it will need to be reviewed by a senior manager. I'll stay on top of it until it's been reviewed and sent - pending any emergencies we should be able to send it out around noon. I'll keep you updated. Thanks for your patience,



Project Manager North West Environmental Group Ltd.

(Primary)

From: Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>

Sent: May 29, 2018 8:15 AM

Subject: Bartlett Results

Good day

	1 11 11		1	
We are hoping to) have the results of	t our dust wipes ir	order to proceed with o	ur projects on board.

Thank you

Gabe.

Sent from my BlackBerry 10 smartphone on the Bell network.

Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: May 17, 2018

Client Job or PO#: NEED Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35254-1b	Port Windlass	May-17-2018	ЭD	Brake Band	Brown	100	None Detected	0	Glass (40%) Synthetic (30%) Non-Fibrous (30%)	100	:
35254-2b	Starboard Windlass	May-17-2018	OC	Brake Band	Brown	100	None Detected	0	Glass (25%) Cellulose (25%) Synthetic (25%) Non-Fibrous (25%)	100	
35254-3b Layer 1	Auxiliary Machine Space (Fire Station 19)	May-17-2018	Оť	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	50	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-3b Layer 2	Auxiliary Machine Space (Fire Station 19)	May-17-2018	ОС	Pipe Insulation - Textile Pipe Insulation - over Fibreglass	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-4b	Auxiliary Machine Space (Fire Station 19)	May-17-2018	OC	Red Gasket	Red	100	None Detected	0	Non-Fibrous	100	
35254-5b Layer 1	Auxiliary Machine Space (Fire Station 18)	May-17-2018	Oť	Pipe Insulation - Textile over Fibreglass	Pipe Wrap - White/Silver	90	None Detected	0	Glass (30%) Non-Fibrous (60%) Cellulose (10%)	100	
35254-5b Layer 2	Auxiliary Machine Space (Fire Station 18)	May-17-2018	Дſ	Pipe Insulation - Textile Pipe Insulation - over Fibreglass Yellow	Pipe Insulation - Yellow	50	None Detected	0	Glass	100	
35254-6b	Auxiliary Machine Space May-17-2018 (Fire Station 18)	May-17-2018	ac	White Gasket	White	100	None Detected	0	Cellulose (15%) Synthetic (15%) Non-Fibrous (70%)	100	

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LAB# 202314

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Comments

%

Other Materials

%

Asbestos

%

Phase

Description

Analyst

Date Analysed

Location

Sample No

100

Non-Fibrous (70%) Cellulose (15%) Synthetic (15%)

0

None Detected

100

Teal

Teal Gasket

Я

May-17-2018

Auxiliary Machine Space (Fire Station 18)

35254-7b

100

Glass (30%) Non-Fibrous (60%) Cellulose (10%)

0

None Detected

20

Pipe Insulation - Textile Pipe Wrap - over Fibreglass White/Silver

Ы

May-17-2018

Main Engine Room (Fire Station 16)

35254-8b Layer 1

35254-8b Layer 2

35254-9b

100 100

Cellulose (15%) Non-Fibrous (85%)

0

100 None Detected None Detected

Black

Black Gasket

9

Glass

0

20

Pipe Insulation -Yellow

Pipe Insulation - Textile over Fibreglass

Ы

Main Engine Room (Fire May-17-2018 Station 16)
Main Engine Room (Fire May-17-2018 Station 16)



LAB# 202314

001224



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514632 Client No.: 35254-13b Location: Bridge-Fire Panel Console (Mid Port Concentration (s/cm²): 178000

Asbestos Type(s): Chrysotile Amosite

Console) Area (cm²): 100

Density (s/mm²): 1850

Lab No.:6514633 Client No.: 35254-14b Location: A.M.S. (Wireway Above Sewage

Tank)

Concentration (s/cm²): 222000 Asbestos Type(s): Chrysotile

Area (cm²): 50 Density (s/mm²): 231

Lab No.:6514634

Client No.: 35254-15b Hatch)

Location: M.E.R. (Wireway Adjacent To Escape Concentration (s/cm²): 111000

Asbestos Type(s): Chrysotile Tremolite Amosite

Area (cm2): 100

Density (s/mm²): 57.7

Lab No.:6514635 Client No.: 35254-16b Location: Bridge-(Forward Port Console)

Area (cm2): 100

Concentration (s/cm²): 64800

Asbestos Type(s): Amosite Chrysotile

Density (s/mm²): 135

Density (s/mm²): 231

Lab No.:6514636

Location: Bridge-(Forward Middle Console)

Client No.: 35254-17b

Area (cm2): 100

Concentration (s/cm²): 55500

Asbestos Type(s): Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:29

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



> 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Density (s/mm²): 106

Project:

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514637 Client No.:35254-18b Location: Bridge-(Forward Starboard Console) Concentration (s/cm²): <9250

Area (cm²): 100

Density (s/mm²): <9.62

Asbestos Type(s): None Detected

Lab No.:6514638 Client No.:35254-19b **Location:** Bridge-(Mid Starboard Console)

Area (cm²): 100 Density (s/mm²): 115

Concentration (s/cm²): 27800

Asbestos Type(s): Amosite Chrysotile

Lab No.:6514639 Client No.:35254-20b **Location:** MCR-Console

Area (cm²): 100

Concentration (s/cm²): 17000

Asbestos Type(s): Chrysotile Amosite

Lab No.:6514640 Client No.:35254-21b

Location: MCR-Top Of Console

Area (cm²): 100

Density (s/mm²): 67.3

Concentration (s/cm²): 16200

Asbestos Type(s): Chrysotile

Lab No.:6514641

Client No.:35254-22b

Location: MCR-Port Side-Top Of Ducting

Area (cm²): 100

Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile Amosite Density (s/mm²): 28.8

Lab No.:6514642 Client No.:35254-23b

Location: MCR-Port Side-Wireway Adjacent

Switch Console

Area (cm2): 100

Concentration (s/cm²): 6480 Asbestos Type(s): Chrysotile

Density (s/mm²): 67.3

Lab No.:6514643 Client No.:35254-24b Location: Upper D: Starboard Aft Alleyway-

Deckhead Cavity Area (cm2): 100 Density (s/mm²): 57.7 Concentration (s/cm²): 27800

Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

Dated: 5/28/2018 4:18:29

05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III



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Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Asbestos Type(s): Chrysotile Amosite

Asbestos Type(s): Chrysotile

Concentration (s/cm²): <4630

Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Asbestos Type(s): Chrysotile Actinolite

Asbestos Type(s): None Detected

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514644 Client No.: 35254-25b Location: Upper D: Stbd Aft Watertight Door- Concentration (s/cm²): 204000

DH Cavity

Area (cm²): 100

Density (s/mm²): 212

Lab No.:6514645 Client No.:35254-26b Location: Upper D: Aft Oilers Cabin-Deckhead Concentration (s/cm²): 37000

Cavity

Area (cm2): 100 Density (s/mm²): 19.2

Lab No.:6514646 Client No.: 35254-27b Location: Poop D: (P-2) Logistics Office-

Deckhead Cavity Area (cm²): 100

Density (s/mm²): <9.62

Lab No.:6514647

Location: N. Bridge D: (N-5) Cadet Cabin-Client No.: 35254-28b

Deckhead Cavity Area (cm²): 100

Density (s/mm²): <9.62

Lab No.:6514648

Location: N. Bridge D: Bridge-Deckhead Cavity Concentration (s/cm²): 16200

Client No.: 35254-29b Area (cm²): 100

Density (s/mm²): 67.3

Lab No.:6514649 Location: M.E.R.-Aft Port (Metal Plate Beneath Concentration (s/cm²): <4630

Wireway)

Area (cm2): 50

Density (s/mm²): <9.62

Lab No.:6514650

Client No.: 35254-31b

Client No.: 35254-30b

Location: Gym-Top Of Electrical Cabinet

Page 3 of 6

Area (cm2): 100

Density (s/mm²): 86.5

Concentration (s/cm²): 83300

Asbestos Type(s): None Detected

Asbestos Type(s): Chrysotile Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:29

Approved By:

Frank E. Ehrenfeld, III



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria

BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6514651 Client No.:35254-31 Location: Additional Sample Received

Area (cm²): 100

Density (s/mm²): 9.62

Concentration (s/cm²): 925 Asbestos Type(s): Actinolite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:29

Approved By:

Frank E. Ehrenfeld, III



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> 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

> Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and it our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 5/28/2018 4:18:29



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date:

5/23/2018

201 - 415 Gorge Road East Victoria BC V8T 2W1 Report No.:

564091 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

> Report No.: 564091 - TEM Dust

> > Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514632 Client No.: 35254-13b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings:2

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0260 Sensitivity (s/mm²):38.5 Detection Limit (s/cm²):3700

Micrograph Number:

EDXA Spectrum ID: 1:14:07PM

Lab No.:6514633 Client No.: 35254-14b

Volume Filtered (mL): 1 Dilution Factor (mL):50 **Grid Openings:8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Bridge-Fire Panel Console (Mid Port

Console)

Asbestos Structures: 48

Structures < 5 Microns: 44 Structures $\geq 5 \mu m$: 4

Structure Density (s/mm²): 1850

Structure Concentration (s/cm²): 178000

Asbestos Type(s): Chrysotile

Amosite

Area Sampled (cm²):50

Location: A.M.S. (Wireway Above Sewage

Tank)

Asbestos Structures: 24

Structures < 5 Microns: 22

Structures $\geq 5 \mu m$: 2

Structure Density (s/mm²): 231

Structure Concentration (s/cm²): 222000

Asbestos Type(s):

Chrysotile

Filter Type: MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<38.5

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²): <9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

BC V8T 2W1

Victoria

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514634

Client No.: 35254-15b

Volume Filtered (mL): 0.25

Dilution Factor (mL):50 **Grid Openings: 8**

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²): 18500

Micrograph Number:

EDXA Spectrum ID: 2:17:13PM

Lab No.:6514635 Client No.: 35254-16b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):4630

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: M.E.R. (Wireway Adjacent To Escape

Asbestos Structures: 6

Structures < 5 Microns: 3 Structures $\geq 5 \mu m$: 3

Structure Density (s/mm²): 57.7

Structure Concentration (s/cm²): 111000

Asbestos Type(s):

Chrysotile Tremolite

Amosite Area Sampled (cm²): 100

Location: Bridge-(Forward Port Console)

Asbestos Structures: 14

Structures < 5 Microns: 12

Structures $\geq 5 \mu m$: 2 Structure Density (s/mm²): 135

Structure Concentration (s/cm²): 64800

Page 2 of 12

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: 22

Structure Density (s/mm²):212

Structure Concentration (s/cm²): 102000

Non-Asbestos Type(s): SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514636

Client No.: 35254-17b

Volume Filtered (mL):2 Dilution Factor (mL):50 **Grid Openings:8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Bridge-(Forward Middle Console)

Asbestos Structures: 24

Structures < 5 Microns: 21 Structures $\geq 5 \mu m$: 3

Structure Density (s/mm²): 231

Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Amosite Chrysotile Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: 24

Structure Density (s/mm²):231

Structure Concentration (s/cm²): 55500

Non-Asbestos Type(s): SiAl - Other Fiber SiMg - Talc

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Page 3 of 12

Frank E. Ehrenfeld, III



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514637

Client No.: 35254-18b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Area Sampled (cm²): 100

Location: Bridge-(Forward Starboard Console)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): ≤ 9.62 Structure Concentration (s/cm²): <9250

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²):962

Pore Size (µm): 0.45 Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62

Structure Concentration (s/cm²):<9250 Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514638 Client No.: 35254-19b

Volume Filtered (mL):2

Dilution Factor (mL):50 **Grid Openings: 8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Bridge-(Mid Starboard Console)

Asbestos Structures: 12

Structures < 5 Microns: 11 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 115

Structure Concentration (s/cm²): 27800

Page 4 of 12

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE Filter Size (mm²):962

Pore Size (µm): 0.45 Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

5/23/2018 Report Date:

Report No.:

564091 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514639

Client No.: 35254-20b

Volume Filtered (mL):3

Dilution Factor (mL):50 **Grid Openings:8**

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²): 1540

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514640

Client No.: 35254-21b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²): 0.104

Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: MCR-Console

Asbestos Structures: 11

Structures < 5 Microns: 10 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 106

Structure Concentration (s/cm²): 17000

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm²):100

Location: MCR-Top Of Console

Asbestos Structures: 7

Structures < 5 Microns: 6 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 67.3

Structure Concentration (s/cm²): 16200

Page 5 of 12

Asbestos Type(s): Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<1540

Non-Asbestos Type(s):

None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018 05/23/2018

Date Analyzed:

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6514641

Client No.: 35254-22b

Client: NOR765

Volume Filtered (mL):0.25 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²): 18500

Asbestos Structures: 3

Structures < 5 Microns: 3

Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514642

Client No.: 35254-23b

Volume Filtered (mL):5 Dilution Factor (mL):50 Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: MCR-Port Side-Top Of Ducting

Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 28.8

Chrysotile

Amosite

Area Sampled (cm²): 100

Location: MCR-Port Side-Wireway Adjacent

Switch Console

Asbestos Structures: 7

Structures < 5 Microns: 4 Structures $\geq 5 \mu m$: 3

Structure Density (s/mm²): 67.3 Structure Concentration (s/cm²): 6480

Page 6 of 12

Asbestos Type(s): Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²): <925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria

BC V8T 2W1

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514643

Client No.: 35254-24b

Client: NOR765

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013

Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Area Analyzed (mm²):0.104

Location: Upper D: Starboard Aft Alleyway-

Asbestos Type(s):

Chrysotile

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514644

Client No.: 35254-25b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013

Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Deckhead Cavity

Asbestos Structures: 6

Structures < 5 Microns: 5 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 57.7

Structure Concentration (s/cm²): 27800

Amosite

Area Sampled (cm²):100

Location: Upper D: Stbd Aft Watertight Door-

DH Cavity

Asbestos Structures: 22

Structures < 5 Microns: 16 Structures $\geq 5 \mu m$: 6

Structure Density (s/mm²): 212

Structure Concentration (s/cm²): 204000

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²): <4630

Non-Asbestos Type(s):

None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature:

Analyst:

Approved By:

Frank E. Ehrenfeld, III



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BCV8T 2W1

Client: NOR765

Report Date: 5/23/2018

> Report No.: 564091 - TEM Dust

> > Wipe

Project: **CCGS Bartlett-General Hazmat Consulting**

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514645

Client No.: 35254-26b

Volume Filtered (mL):0.25 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):18500

Area Sampled (cm²): 100

Location: Upper D: Aft Oilers Cabin-Deckhead

Cavity

Asbestos Structures: 2

Structures < 5 Microns: 2

Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 37000

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62

Structure Concentration (s/cm²):<18500

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514646

Client No.: 35254-27b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings:8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):4630

Micrograph Number:

EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Poop D: (P-2) Logistics Office-

Deckhead Cavity

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <4630

Page 8 of 12

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514647

Client No.: 35254-28b

Volume Filtered (mL): 0.5 Dilution Factor (mL): 50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Area Sampled (cm²):100

Location: N. Bridge D: (N-5) Cadet Cabin-

Deckhead Cavity

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures \geq 5 μ m: None Detected Structure Density (s/mm²): \leq 9.62

Structure Concentration (s/cm²): <9250 Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6514648 Client No.:35254-29b

Volume Filtered (mL):2

Dilution Factor (mL): 50 Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):2310

Micrograph Number: EDXA Spectrum ID: Area Sampled (cm²): 100

Location: N. Bridge D: Bridge-Deckhead Cavity

Asbestos Structures: 7

Structures < 5 Microns: 6 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 67.3

Structure Concentration (s/cm²): 16200

Asbestos Type(s): Chrysotile

Actinolite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<2310

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018 05/23/2018

Date Analyzed:

Signature:

Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria

V8T 2W1 BC

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514649

Client No.: 35254-30b

Volume Filtered (mL):2

Dilution Factor (mL):50 **Grid Openings:**8

Opening Area (mm²):0.013 Area Analyzed (mm²): 0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):4630

Area Sampled (cm²):50

Location: M.E.R.-Aft Port (Metal Plate Beneath

Wireway)

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <4630

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<4630

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6514650

Client No.: 35254-31b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings: 8

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62

Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Gym-Top Of Electrical Cabinet

Asbestos Structures: 9

Structures < 5 Microns: 9 Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 86.5 Structure Concentration (s/cm²): 83300

Page 10 of 12

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<9.62 Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Frank E. Ehrenfeld, III



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.:

564091 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6514651 Client No.:35254-31

Volume Filtered (mL):5
Dilution Factor (mL):50

Grid Openings: 8
Opening Area (mm²): 0.013

Area Analyzed (mm²): 0.104 Sensitivity (s/mm²): 9.62 Detection Limit (s/cm²): 925

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Additional Sample Received

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 9.62 Structure Concentration (s/cm²): 925

Asbestos Type(s):

Actinolite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (μm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <9.62 Structure Concentration (s/cm²): <925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/23/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:31

Approved By:

Page 11 of 12

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/23/2018

Report No.: 564091 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Dated: 5/28/2018 4:18:31



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.:

564104 - Lead Paint

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6514792

Client No.: 35254-10b

Location:

Description: Red Paint On Metal

Auxiliary Machine Space Watertight Door

Result (% by Weight): <0.0062

Result (ppm):

Comments:

Lab No.:

6514793

Client No.: 35254-11b

Description: White Paint On Metal

Location: Main Engine Rm Aft Bulkhead Result (% by Weight): 0.96

Result (ppm): 9600

Comments:

Lab No.:

6514794

Client No.: 35254-12b

Description: Black Paint On Metal Location: Port Windlass

Result (% by Weight): <0.0067

Result (ppm):

Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received:

5/18/2018

Date Analyzed:

05/21/2018

Signature: Analyst:

Dated: 5/28/2018 4:18:37

Approved By:

Page 1 of 2

Frank E. Ehrenfeld, III

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 5/21/2018

Report No.:

564104 - Lead Paint

Project:

CCGS Bartlett - General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC Method: ASTM D3335-85a, US EPA SW846 3050B:7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Paint

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and it our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:

- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.

Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD=0.2 ppm MDL=0.005% by weight RL= 0.010% by weight (based upon 100 mg sampled)

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

- * Insufficient sample provided to perform QC reanalysis (<200 mg)
- ** Not enough sample provided to analyze (<50 mg)
- *** Matrix / substrate interference possible.

Dated: 5/28/2018 4:18:37

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Richardson, John

From:

Richardson, John

Sent:

2018-June-15 5:36 PM

To:

Chaikin, Gabriel; Hunt, Cliff; Harvey, Clifford; DeAngelis, Vincenzo

Cc:

Wright, Edward; Granger, Louise Anne

Subject:

Re: Bartlett Results

Gabe.

That's great, thanks for this on short notice.

Cliff,

See Gabe's edits below

John Richardson 613-617-9060

From: Chaikin, Gabriel

Sent: Friday, June 15, 2018 5:09 PM **To:** Richardson, John; Hunt, Cliff

Cc: Wright, Edward; Granger, Louise Anne

Subject: Bartlett Results

Concerning the Asbestos on the CCGS Bartlett:

In February of this year testing was conducted on the Bartlett which brought to light previously unidentified asbestos containing materials. Due to these discoveries further exploratory testing was conducted though-out the vessel. The majority of the findings were in areas that are not regularly accessed and do not receive regular cleaning; meaning that the contamination occurred prior to previous remediation activities. Some findings though were in high traffic areas; indicating that encapsulation may have been failing or that there were unknown sources. Each finding has had to be analysed individually. A major source of contamination was discovered in the exhaust stack. This area was fully remediated in 1999 to remove all asbestos containing material but at that time the bulkhead insulation in this area was not replaced. The insulation is not asbestos. It was contaminated with asbestos prior to the remediation and has since served as a source of contamination as it has shed the fibers down into the machinery space. These asbestos contaminated materials will be fully encapsulated prior to the refit work proceeding.

Tests conducted on the vessel include bulk samples of materials, air samples taken over 10 hour periods while the vessel is stationary and while underway, and dust wipe samples. All air samples have been in the non-detectible range, however dust wipe samples have indicated asbestos above acceptable levels. Of key note the wipe samples taken in the vessels air ducting have found no contamination.

The ongoing concerns of asbestos on the Bartlett were recently raised at the Marine Engineering – National Management Committee and it was indicated that the asbestos issues were being handled in the region utilizing local contractors with the appropriate environmental credentials. A full clean of the vessel is underway with the accommodation now complete and the engine spaces in progress. Asbestos training has been conducted for the crew. An ongoing regime of air sampling and dust wipes will be implemented for this vessel. Controls have been put in place to limit access to all areas which cannot be guaranteed asbestos free.

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Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

From: Richardson, John

Sent: 2018–June-15 12:42 PM **To:** Wright, Edward; Chaikin, Gabriel

Cc: Granger, Louise Anne **Subject:** RE: Bartlett Results

Importance: High

Gabe/Ed,

Commissioner has asked Cliff to provide a few lines on the Bartlett and the Asbestos issue. Could you please review this and make sure it is correct and add any pertinent info?

Concerning the Asbestos on the CCGS Bartlett:

During the last six months or so there has been some discovery of previously unidentified asbestos containing materials on the Bartlett. Due to these discoveries there has been more exploratory testing conducted using 3rd party laboratories. These tests have included both air sampling and wipe tests. All air samples have been in the acceptible range, however dust (wipe) samples have had indications of asbestos. It is believed that there has also been more asbestos located in the exhaust stack. The ongoing concerns of asbestos on the Bartlett were recently raised at the Marine Engineering – National Management Committee and it was indicated that the asbestos issues were being handled in the region utilizing local contractors with the appropriate environmental credentials.

Thanks, John

Bartlett Asbestos Results

Saturday, June 16, 2018

3:17 PM

1	
Subject	FW: Bartlett Results
From	Hunt, Cliff
To	Ryan, Sam
Sent	Friday, June 15, 2018 6:30 PM

THE WAY TO SEE THE PARTY

A summary of what we discussed earlier...

Cliff

From: Chaikin, Gabriel
Sent: Friday, June 15, 2018 2:09 PM
To: Richardson, John < John.Richardson@dfo-mpo.gc.ca>; Hunt, Cliff < Cliff.Hunt@dfo-mpo.gc.ca>
cc: Wright, Edward < Edward.Wright@DFO-MPO.GC.CA>; Granger, Louise Anne
<c. Wright, Edward < Edward.Wright@DFO-MPO.GC.CA>; Solution of the Course Anne
CoulseAnne.Granger@dfo-mpo.gc.ca>
Subject: Bartlett Results

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Gabriel Chaikin Marine Engineering | Ingénierie navale (250) 363-0228

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Thanks, John Document Released Under the Access to sa Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Subject	Bartlett	
From	Harvey, Clifford	
То	Ryan, Sam	
Sent	Friday, June 15, 2018 5:37 PI	W

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Clifford Harvey (613) 2201810

No information has been removed or severed from this page

Ayres, Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>

Sent: Monday, June 18, 2018 12:24 PM

To: Ayres, Bob

Subject: RE: Bartlett Asbestos - crew meeting?

Attachments: Alexander 22 july 2017 2 gasket samples.pdf; CCGS Alexander 2015.pdf; CCGS

Alexander 2017.pdf

Hi – I've received these files from one of our hygienists in Ottawa who dealt with the CCGS Ship Alexander in 2015 and 2017

on this issue - have a

read and then we should talk, hopefully later today.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM Occupational Health Medical Officer, Public Service Occupational Health Program (BC) Health Canada / Government of Canada

don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)

Santé Canada / Gouvernement du Canada

don.krawciw@hc-sc.gc.ca / Tél.: 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]

Sent: 2018-06-15 7:39 AM **To:** Krawciw, Don (HC/SC)

Subject: RE: Bartlett Asbestos - crew meeting?

Thanks Don. We'll be good to go.

Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>

Sent: Thursday, June 14, 2018 5:01 PM **To:** Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca> **Subject:** RE: Bartlett Asbestos - crew meeting?

I'm thinking later in the week. Will be in touch again in Monday.

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Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

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From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.qc.ca]

Sent: 2018-06-14 11:31 AM **To:** Krawciw, Don (HC/SC)

Subject: Bartlett Asbestos - crew meeting?

Hello Don,

As we thought might happen the new crew that is now aboard the Bartlett is asking if they can have the same opportunity to talk about asbestos with yourself and the NW folks.

Would there be a time early next week that would work for you? Monday morning is not great here but that afternoon or anytime Tuesday would work (as would later in week).

Please let me know if this is possible, Bob

From: Ayres, Bob

Sent: Wednesday, June 13, 2018 4:26 PM

To: 'Krawciw, Don (HC/SC)' < don.krawciw@canada.ca >

Subject: RE: Bartlett Asbestos

Hi again Don,

We have decided to do up a regional bulletin for awareness of employees, regarding asbestos and lead paint.

In that bulletin we would like to include a little bit of background to the issues – perhaps something along the lines of what was discussed on Friday touching on uses and presence of these products in the workplace, the changes in thresholds over the years and to attempt to place risk and potential exposure in context, etc.

We hope to have this bulletin ready for distribution by the later part of next week at the latest.

The attached IIRs and lead paint result were received by our office on Tuesday of this week and may provide additional context.

Regards, Bob

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From: Ayres, Bob

Sent: Monday, June 11, 2018 3:20 PM

To: 'Krawciw, Don (HC/SC)' <don.krawciw@canada.ca>

Subject: RE: Bartlett Asbestos

Thanks Don - will do.

Bob

From: Krawciw, Don (HC/SC) < don.krawciw@canada.ca>

Sent: Monday, June 11, 2018 2:47 PM

To: Ayres, Bob < Bob.Ayres@dfo-mpo.gc.ca >

Subject: RE: Bartlett Asbestos

Thanks Bob – I've forwarded this along – please check back with me in 2 weeks if you haven't heard from me or someone at Health Canada before then.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B) Santé Canada / Gouvernement du Canada don.krawciw@hc-sc.gc.ca / Tél.: 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]

Sent: 2018-06-11 12:47 PM To: Krawciw, Don (HC/SC) Subject: Bartlett Asbestos

Hello Don,

Apologies for delay in getting this to you today - morning got busy.

Attached are the reports from testing on Bartlett.

- 1. AB1 is the bulk sample from May 17th
- 2. ABWIPE1 is wipe test from various locations on board report date May 23rd
- 3. Pb1 is the lead sample from paint on metal report date May 21st
- 4. 551806441 is the more recent dust sampling (collected May 31st) which includes the results from the stack (funnel) on Bartlett

s.16(2) cument Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

As discussed we'd be very interested in the assistance of your industrial hygienist in providing a review of these sampling results.

Any expert of informed opinion would be welcome with regard interpretation of the numbers in the various reports and the likely meaning of these to our employees who have potentially been exposed.

Cleaning and remediation efforts are currently underway. We are considering how best to communicate further to employees past and present regarding potential exposure and documenting of this potential in case (hopefully not) of need for future claim etc.

Thanks again for coming down and speaking with our people on Friday. It was very helpful.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca



4495, boul, Wilfrid-Hamel, suite 150, Québec (Québec), GIP 2J7 418 977.1220 1877 977 1220 labEnvironeX.com

Rapport final

Bio-visite numéro: 2017-284034

Client:

Verreault Navigation inc.

Contact:

Adresse :

127, Rue du Quai Les Méchins Québec, Canada **G0J 1T0**

Téléphone:

(418) 729-3733

Télécopieur :

Microscopie à polarisation et dispersion des couleurs -

Microscopie à polarisation et dispersion des couleurs -

Date de prélèvement : 22 juillet 2017

Date de réception : 27 juillet 2017

Date de résultat : 27 juillet 2017

Date d'approbation : 27 juillet 2017

Ini.

SCO

Entrepreneur:

d'installation :

Méthode

Méthode IRSST 244

No. Projet ou No. Bon Commande:

Garde Côtière Canadienne

Prélevé par :

N/D

01 : Identification de l'échantillon : 1

Lieu du prélèvement : Navire NGCC Sir William Alexander

État à la réception : Conforme

Notre référence au MDDELCC :

Matrice / Nature de l'échantillon : Matériaux

Origine de l'échantillon :

Point d'échantillonnage :

Analyse de l'Amiante et des Matériaux

Analyse Amiante dans les matériaux (MLP) <24h

- Couche #1

Composition: Joint d'étanchéité gris foncé

FIBRES D'AMIANTE: Non détectées Matériel non-fibreux: 75 à 90% Fibres naturelles: 10 à 25%

- Couche #2

Composition: Métal gris

FIBRES D'AMIANTE: Non détectées

Matériel non-fibreux: >90% Fibres naturelles: <1%

02 : Identification de l'échantillon : 2

Lieu du prélèvement : Navire NGCC Sir William Alexander

Matrice / Nature de l'échantillon : Matériaux

État à la réception : Conforme

Méthode

Méthode IRSST 244

Notre référence au MDDELCC :

Origine de l'échantillon :

Point d'échantillonnage :

Analyse de l'Amiante et des Matériaux

Amiante dans les matériaux (MLP) <24h

- Couche #1

Analyse

Composition: Joint d'étanchéité gris pâle

FIBRES D'AMIANTE: Detectées (+)

Type d'amiante: Chrysotile de 75% à 90%

Matériel non-fibreux: 5 à 10% Fibres naturelles: 1 à 5%

- Couche #2

Composition: Métal gris

FIBRES D'AMIANTE: Non détectées

Matériel non-fibreux: >90% Fibres naturelles: <1%

Bio-visite numéro: 2017-284034

Page 1 de 2

Ini.

SCO

N.B.: Une mention «Fibres d'amiante : Détectées» confirme que la concentration est évaluée à être supérieure à 0,1 %. Cette méthode analytique est semi-quantitative. Le domaine d'applicabilité de la méthode varie de < 1 % à 100 % (v/v).

Légende pour l'analyse de l'amiante dans les matériaux Résultats confirmant la norme permise : Négatif (non-détectées) / Trace (<0,1%) Gammes confirmant la présence d'amiante dans l'échantillon : Détectées (+); <1% / 1-5% / 5-10% / 10-25% / 25-50% / 50-75% / 75-90% / >90%

Approuvé par :



Les analyses sont effectuées dans les Laboratoires EnvironeX de Québec. Ces derniers sont accrédités par le Ministère du Développement Durable, Environnement et Lutte contre les Changements Climatiques (MDDELCC) du Québec, selon la norme internationale ISO/CEI 17025.

Notre département d'analyse de l'amiante dans les matériaux participe aux séquences d'examens «BAPAT» de l'AIHA américaine, est certifié professionnel par cette dernière et est reconnu par l'IRSST.

Notre département de microbiologie de l'air au site de Québec, participe aux séquences d'examens «EMPAT» de l'AlHA américaine

Ce certificat ne peut être reproduit, sinon en entier, sans l'autorisation écrite du laboratoire. Résultats applicables qu'aux échantillons soumis à l'analyse.

Bio-visite numéro : 2017-284034

<u>Asbestos Exposure (Hazardous Occurrence) July 31, 2015</u> CCGS Sir William Alexander

Summary

On July 31, 2015 the vessel was undergoing annual maintenance in a shipyard (Newdock) located in St. John's, NL an unknown material/debris was discovered on the deck in an passageway adjacent to an accommodation area of the vessel. Once the material was noticed a senior officer was summoned to the location and it was quickly determined that its origin was associated with the overhead electrical wire/cable chases, which were known to contain asbestos. Access to this area was restricted and the shipyard safety officer was advised. Air sampling and material sampling was undertaken by Pinchin Leblanc after which the area was professionally cleaned by Belfore.

An incident investigation was conducted; the findings were described in the IIR which was forwarded to the Safety Management section of Coast Guard. There has been a delayed follow-up on the Corrective & Preventative Measures stated in the Incident Investigation Report (IIR) due to changing personnel, conflicting priorities and the lack of established protocols to guide the personnel involved. As a result the IIR for this incident remains open with a number of concerns unanswered and corrective measures not implemented.

Incident Details

The initial investigation determined that the material originated from overhead wire/cable chases, which are located above the suspended ceiling. Anecdotal evidence suggests the material was dislodged by shipyard employees during a night shift on or about June 25, 2015. It is suspected that the asbestos containing material (ACM) remained on the deck until July 31, 2015 mostly concealed by the ceiling tiles which were leaning against the bulkhead in the immediate area where the material/debris was discovered.

As a result of the ACM remaining on the deck in the area where it was dislodged for an extended period of time employees from both shifts may have been exposed. The duration and level of exposure is conceivably different for each employee due to the location of their accommodations and their requirement to transit the area, perform duties and reside in or adjacent to the area where the ACM was discovered.

Employees would have walked through the area to get from one area of the ship to another; some personnel would have been conducting husbandry activities i.e. cleaning cabins, sweeping the alleyway deck, washing bulkheads and handrails, etc. Most likely there was more ACM originally dislodged than was discovered. It is plausible that some amount of the ACM would have been swept up during daily cleaning activities and/or tracked to other spaces by employees and shipyard workers transiting that alleyway. In the worst case scenario the potential exposure time while transiting or carrying out cleaning activities would be measured in minutes per day.

<u>Asbestos Exposure (Hazardous Occurrence) July 31, 2015</u> CCGS Sir William Alexander

Generally speaking this alleyway is not a high traffic passage due to the fact that it is almost exclusively cabins with only the Ships Office, thirty feet away, being a common space with slightly higher traffic. A normal daily routine for an employee who's cabin is located in this alleyway, would include leaving their cabin in the morning to report for work, numerous return transits to their cabin for breaks or meal times and to return at the end of the work day. Regardless of the amount of transits through the area, the possible exposure time would be seconds each day, with a total daily exposure being measured in minutes.

This incident has been discussed with a number of interested parties since July 31, 2015. There have been informal discussions with the employees who were onboard; the shipboard management team has consulted with Coast Guard Safety Management and Health Canada in an effort to determine what actions are required to effectively deal with concerns and to prevent reoccurrence.

Since the initial discovery of the asbestos containing material, a number of findings and events have been identified, as follows:

- at the opening meeting for the vessel maintenance/repair, shipyard representatives were advised that asbestos was present in various locations on the vessel. A copy of the Asbestos Survey was provided at that time;
- the Certificate of Analysis for the material confirmed it contained asbestos 50/75% Chrysotile (copy attached);
- the Inspection Report for the air sampling confirmed that fibre levels were acceptable lower than the TLV of 0.1f/cc (copy attached);
- 36 Coast Guard employees worked onboard (list attached), for varying periods of time, from June 25 to July 31, 2015;
- it is estimated that the ACM remained on the deck for 37 days;
- the employees (36) who worked onboard June 25th to July 31st may have different accumulated exposure depending on their accommodation location duties and responsibilities onboard:
- two (2) meetings were held onboard (August 3rd & 6th) to brief the employees on the situation, to convey information and to listen and note concerns;
- two (2) teleconferences were held (September 18th & 30th)) with Coast Guard Safety Management, Health Canada and Shipboard Management to review the incident and coordinate an appropriate response and follow-up;

Asbestos Exposure (Hazardous Occurrence) July 31, 2015 CCGS Sir William Alexander

Concerns

There is a suspicion that along with the larger pieces of ACM being dislodged, finer particles (dust) would have been created by the chaffing/grating during the installation of the new wires. Therefore an undetermined amount of asbestos fibres may have been present in the air for an unknown period of time during and after the wires new installation. This possibility fuels a deeper concern for employees. Employees are unfamiliar with the immediate and long term effects of this asbestos exposure. Specifically, the health issues associated with the ACM remaining in that area for an extended period and any health risks (potential) airborne fibres may or may not present.

Recommended Action

As discussed during the teleconferences (September 18th & 30th) it was agreed that as a minimum the documented information and reports of this asbestos exposure should be placed on each employees Health Canada medical file for future reference. A list of the employees present during the period of concern (June 25th to July 31st), a copy of the Pinchin LeBlanc Environmental Ltd. "Certificate of Analysis" for the bulk sample of ACM and air sample "Inspection Report" and the Incident Investigation Report (IIR) completed by the Chief Engineer are attached to this document for reference. Therefore it is requested that this report of events and attachments be placed on each of the identified employee (HC) medical file.

In addition to the file notation it is requested that an evaluation of the incident based on the information and attached documents be conducted by a Health Canada physician to determine if there are potential immediate and/or long term health issues/risks likely to be experienced by the employees concerned. Once an evaluation has been completed a written response indicating whether or not there is cause for concern should be sent to the Commanding Officer of the Sir William Alexander for dissemination by the Occupational Safety and Health committee. This effort will serve to alleviate much of the speculation currently being transmitted throughout the vessels compliment and possibly fueling unnecessary concern and anxiety.

Respectfully,

Robert D. Gray

Commanding Officer
CCGS Sir William Alexander

Cc: K. Allen

D. Monty (HC)

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المعدا	Fisheries ar Canada	nd Oceans	Pēches	et Océans
DAD	Canada		Canada	

MEMORANDUM NOTE DE SERVICE

To Å	Robert Gray Commanding Officer CCGS Sir William Alexander	Security Classification - Classification de sécurite Our File - Notre référence
	COGS Sil VVIIII Alexander	Your File - Volre référence
From	Gerard O'Rellly Logistics Officer CCGS Sir William Alexander	Date
De	Joseph William Manager	2015-09-21

Subject Sujet List Of Crew Members On Board CCGS Sir William Alexander During The Following Time Period: June-25 To July-31

North Crew	South Crew	
Michel Champagne	Gerard O'Rellly	
Kenneth MacDonald	Judith Joncas	
Martin Atkins	Michael Kiley	
Randal Brushett	David Champion	
Chester Cragg	Lorne Weinhofer	
Davld Ferguson	John Wood	
Danial Marsh	Joanne Muron	
leffery Laugher	Louie Campbell	
Dennis Soppitt	Darren Stoodley	
lean-Marc Cormier	Kevin Hartling	
Stephanie Sparks-Ramsey	Gary Hawes	
Denise Jones	Danial Allain	
isa Howe	Garnet Boutiler	
Thomas Hilderbrandt	James Ayres	
David Walsh	Heather MacKinnon	
	Timothy Fitzgerald	
	Andrew Milne	
	Evelyn Donovan	
	Joseph Boudreau	
	Darrell Hudgins	





Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

August 4, 2015

Pinchin LeBlanc Environmental Ltd. 27 Austin Street, 2nd Floor St. John's NL A1B 4C3

Attention:

Lab Reference No.:

b122116

Client Project Name:

PLEL, St. John's Dockyard

Client Project No.:

02-02-01544

Date Received:

August 4, 2015 August 4, 2015

Date Analyzed: Analyst(s):

L. DeCurtis

Samples submitted:

Phases analyzed:

1 1

Methods of Analysis:

EPA 600/R-93/116 - Method for the Determination of Asbestos in Bulk Building Materials dated July, 1993

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared with representative portions of material and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold (see chart below) indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with all provincial regulatory requirements (NIOSH 9002, I.R.S.S.T. MA-244). Multiple phases within a sample are analyzed and reported separately.

Provincial Jurisdiction	Regulatory Threshold	Provincial Jurisdiction	Regulatory Threshold
Ontario, British Columbia, Nova Scotia	0.5%	Manitoba	0.1% friable 1% non-friable
Quebec	0.1%	Saskatchewan	0.5% friable 1% non-friable
Alberta, NWT, Yukon, Nunavut	1%	Newfoundland and Labrador, PEI and New Brunswick	1%

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin Ltd. is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0) for the 'EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples' and meets all requirements of ISO/IEC 17025:2005.

This report relates only to the items tested. If you have any questions, please feel free to contact me.

Yours truly.

Digitally Signed by

Laboratory Manager, Environmental Asbestos Services

Pinchin Ltd.

This test report may not be reproduced, except in full, without the written expressed of the leboratory. The client may not use this report to claim product endorse NOTE: any agency of the U.S. Government. This report is valid only when signed in blue ink by the analyst and the laboratory manager. Vinyt asbestos floor tiles contain very fine fibres of asbestos and may be missed by some laboratories using the PLM method, internal verification studies performed by Pinchin Indicate that the chance of missing asbestos in oor tiles is no higher then about 2%. The vinvi tile study and laboratory documentation on measurement uncertainty are evallable upon request. The analysis of dust samples by

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Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

Client Project Name:

PLEL, St. John's Dockyard

Client Project No.:

02-02-01544

Prepared For:

VZ-VZ-U | VT-

Lab Reference No.:

b122116

Date Analyzed:

August 4, 2015

BULK SAMPLE ANALYSIS

SAMPLE	SAMPLE	% COMPOSITION (VISUAL ESTIMATE)				
IDENTIFICATION	DESCRIPTION	ASBESTOS)	OTHER		
02-02-1544-S001 CCGS Sir William Alexander, Parging cement from officer's deck, port side	parging cement.	Chrysotile	50-75%	Non-Fibrous Material	25-50%	

REVIEWED BY

ANALYST

Page 1 of 1



Inspection Report

Project Information			
Date: Pinchin Repr July 31, 2015			Report Number: 001 Pinchin File: 02-02-TBD
Project Name: NEWDOCK Air Monitoring Services, CCGS Sir William Alexander		Site Address: CCGS Sir William Alexander, St. John's Dockyard, St. John's, NL	
Client: NEWDOCK			
Contractor: Own Personnel			Arrival on Site: 11:30 AM Number of Workers: 1

Inspector:

Environmental Technologist (709) 690-9369

Reviewed by:

Regional Vice President, NL

(709) 754-4490

Description of Work in Progress

Work Area	Work in Progress
Officer's Deck, port side	Completion of cleanup of suspect ACM debris uncovered during renovation activities

Samples Collected and Results, as Available

Sample No.	Sample Type	Location/Description	Start Time	Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Result (fibres/cc)
02-02-A001	Clearance	Officer's Deck, port side	11:45 AM	15.0	30	450	<0.04

Calibration of air sampling pump checked before and after sample collection.

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Inspection Report; Report Number: 001 NEWDOCK Air Monitoring Services, CCGS Sir William Alexander CCGS Sir William Alexander St. John's Dockyard, St. John's Nt.

July 31, 2015 Pinchin File 02-02-TBD NEWDOCK

1. SAN	1. SAMPLES & TESTING 🛛 4. NEGATIVE PRESSURE 🔲 7. WA			ASTE HANDLING			
2. SITE	EISOLATION		5. PERSONAL PROTECTIVE EQUIPMENT		8. Cl	EANING	
3. FAC	FACILITIES/EQUIPMENT						
Item	Comments					Action	
	area following the co	ompleti y that t	ole was collected in a fixed location inside on of removal operations. Clearance samp the abatement area is suitable for occupant ory protection.	oles	rk		
1.	(PCM) following the	NIOSI	ected and analyzed by Phase Contrast I 7400 analytical method using the "A" se of airborne fibers. Air sampling services c	of cou	ınting	Informed Newdorepresentative I that the analysis clearance air sa acceptable.	Darryl Penney s of the
	Air sampling pump l						
	Analysis of the clearance air sample indicated that fibre levels were acceptable and lower than the current TLV of 0.1f/cc.						
2.	NA					NA	
3.	NA					NA	
4.	NA					NA	
5.	NA					NA	
6.	NA					NA	
7.	NA					NA	
8.	NA					NA	
9.	NA					NA	

n		4
IJ.	D.	

FISHERIES AND OCEANS CANADA CANADIAN COAST GUARD

INCIDENT INVESTIGATION REPORT

To be thoroughly completed by the responsible manager with assistance from the OSH Committee Member or Representative.

Please print or type. Return completed form to Fleet Safety & Security.

A. Type Of Occurrence					
☐ Minor Injury (First Aid Only)		☐ Min	or Injury (Visit to	Doctor)	-
☐ Unsatisfactory Condition		Dis	abling Injury (An	y Time Lo	ss)
☐ Security Incident					
☐ Near Miss		⊠ Ha:	zardous Occurrer	nce (selec	t incident from "B")
		1.0			
B. HAZARDOUS OCCURRENCE - TYPE OF					
☐ Collision	Grounding/Strar	-	ng 📙 Ste	eering loss	i
∐ Fire	Mechanical Faile	ure	☐ Pe	erson Over	board
☐ Flooding	Elect. Power Fa	ilure	☐ Po	ollution/Env	vironmental
Fouling Underwater Object	Propulsion Failu	ıre	⊠ Ot	her <i>specif</i> y	/: Asbestos Exposure
C. GENERAL INFORMATION			<u>, ,</u>		
Site or Vessel Name : Sir William Alexander	Work Nature (Taskir	ng) Dry Doc	k / Refit Da	te of Report	August 4th 2015
Mailing Address PO Box 1006, Dartmouth, i	NS, B2Y 4A2			<u>.</u>	
Responsible Supervisor's Name Andrew Milne)	Super	visor's Telephone #	(902) 456-9	9281
D. EMPLOYEE DATA* (IF APPLICABLE - ONL	Y WHERE THERE IS AN INJUR	RY TO AN EMPI	LOYEE) *ALL FIELD	OS MUST BE	COMPLETED
Employee's Surname Given N	lame		Initials	Employee Date Of Bir	rth
Gender Male Female Age		Number of Ye	ars of Experience in t	he Occupation	on
Job Title Employ	ment Status				
□ Ful	l Time 🔲 Term	☐ Casual	/ Relief 🔲 Prog	ram Client	
Cor	ntractor Student	Othe	r(specify):		
E. OCCURRENCE INFORMATION	<u></u>				
	<u> </u>		Hours on Shift This	Day Ho	ours Awake Prior to
Occurrence Location	Date and Time of Occurrer	nce	Prior to Occurrence		ccurrence
Officers deck port side alleyway	31 July 2015 07	700 hrs		hrs	hrs
Weather Conditions At the Time of the Occurrence	ie .				
Dry Dock, warm,					
Description of Injury (if applicable)					
Was a risk assessment performed prior to commo	encement of the task which r	esulled in this	occurrence?	Yes	□No
Specify: Asbestos surveys completed annua at Newdock upon arrival into the ya		pertaining to as	bestos was given and	d discussed v	with the Safety department
Was accident prevention training in relation to the	dutles performed provided t	to the injured e	employee prior to the	time of the ha	azardous occurrence?
Yes No Specify:					
F. INVESTIGATION OF OCCURRENCE				***	
On July 31 st at approximately 0700 hours a deckt				white unknow	on embetance on the dock

arrived the project manager Andrew Smith was notified and he called in the yard safety foeman Mark Warren. We both reviewed the asbestos report and

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Page 1 of 3

on the officers deck port side alleyway at the entrance to the cadets cabins. There was no one working in this area during this time. There was several pieces of a white/grey looking compound that had marks on it that suggested that it went around electrical cables. The area was sectioned off right away. A review of the asbestos annual survey from 2014 and the complete ships asbestos survey from 2006 indicated that in area 27 (officers deck alleyways) that cable chase's were known to contain 60% chrysotile non friable asbestos containing mastic compound. At 0800 hours when the shipyard workers

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y .	D.	1

concluded that it was a good possibility that it was an asbestos containing material. The deck head panels were down in this area while the work was being carried out which hid the larger pieces of the substance. The deckhead panels were recently installed prior to first notification. In the afternoon the shipyard had a local company Pinchin LeBlanc come in to take an air sample and a batch sample of the substance. The worker from the Pinchin LeBlanc notified myself that if the air sample contained asbestos he would let us know right away and either way we should have the results back later that day (air sample only, batch sample was sent to a testing facility out of province). After the samples were taken the shipyard safety department cleaned up the visible substance on the deck. The air results from the sample were not given over the weekend and was told verbally to the Chief Engineer from the yard safety foreman, that the sample came back indicating there was no asbestos fibres in the air. A local cleaning company Belfore arrived on the ship to clean up the alleyway and in the deckhead where the substance came from. Talking with Officer Cadet Thomas Hildebrandt who was living in the area for the previous patrol with the opposite crew said that it is likely that it came down when wires were being run around June 25th, approximately 6 weeks previous to the date of occurrence. This would have affected both North and South crews of the Sir William Alexander. The batch test sample came back at approximately 1600 hours on August 4th indicating that the substance was an asbestos containing material of the chrysotile type and contained between 50 and 75% asbestos. The RDPA was contacted on Friday July 31th for advice, and also forwarded information pertaining to a course of action to follow as well as a contact with Health Canada

G. DIRECT CAUSES

In this section please identify all personal, environmental and/or job/system factors

Shipyard safety systems failed to ensure compliance with the ships pre job safety assessment and protocols for removal of asbestos containing materials.

H. ROOT CAUSES

In this section please identify all substandard practices and/or substandard conditions if any

Through observations on shippard salety items between the period of July 9th to August 4th that were previously mentioned to the shippard, it is evident that the shippard salety department has had a lack of presence on the ship and monitoring of shippard s workers safety and compliance.

I. WITNESSES	(IF MORE PLEASE ATTACH INFORM	IATION)	
Witness #1 - Name	Telephone #:	Witness #2 - Name	Telephone #:
Tom Hildebrandt	(902) 456-9281	Daniel Allain	(902) 456-9281
Witness #3 - Name	Telephone #:	Witness #4 - Name	Telephone #:
Tim Fitzgerald	(902) 456-9281		

J. CORRECTIVE & PREVENTATIVE MEASURES

Corrective measures taken and/or recommended to prevent recurrence

Recommendations from the RDPA and Health Canada are to be followed concerning the health and safety of the crew that has been exposed to an asbestos containing material.

Recommend that there be a designated and trained CCG safety officer to monitor and coordinate with shippard safety personnel onboard during manned refit periods where tiability of the vessel is not passed over to the shippard for the vessel

Notified Newdock shippard to conduct more diligent safety rounds at regular intervals.

K. RESPONSIBILITY FOR CORRECTIVE & PREVENTATIVE MEASURES/ACTIONS			
Corrective action responsibility assigned to	Date to be completed	Follow-up date	
Andrew Milne	August 6 th 2015	August 13 th 2015	

L. PROPERTY DAMAGE	Estimated Loss (\$)	
Nature & extent of property damage		

Name of Manager or Manager Appointee	Telephone #	Signature / //
Andrew Milne	(902) 456-9281	Ast Str Call
Manager's Comment		7,00

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9.B.1

Name of OSH Committee Member / OSH Representative	Telephone #	Signature
James Ayres	(902) 456-9281	(d. m.
OSH Committee Member / Representative Comment	<u> </u>	1 grys.
		To control the control of the contro
N. COMMANDING OFFICER / EMPLOYER COMMENTS	3	
N. COMMANDING OFFICER / EMPLOYER COMMENTS Name of Commanding Officer or Employer	Telephone #	Signature
Name of Commanding Officer or Employer		Signature
Name of Commanding Officer or Employer	Telephone #	Signature
Name of Commanding Officer or Employer Kevin Hartling	Telephone #	Signature

CCGS Sir William Alexander

Summary

On July 21, 2017, the vessel was undergoing annual maintenance in dry-dock at Verreault Navigation in Les Mechins, QC. A package of gaskets that had a white, furry substance on them was opened in central stores and the gaskets were spread out upon the desk. The ship-generated stock label identified them as containing asbestos was noticed after they had been unwrapped. The space was sealed off and the shipyard Safety Officer was advised. Construction SOGESCO conducted a clean-up of the space and packaged samples which were tested by Groupe EnvironeX.

An incident investigation was conducted; the findings are described in the IIR. Actions recommended in this report expand upon those recommended in the IIR.

Incident Details

On Friday, July 21, 2017, a package of gaskets was opened up on the desk of central stores a FSR for Garlock of Canada for Fairbanks-Morse. The FSR noticed they had a white, furry substance on the surface, which was not what he expected to see. He re-read the ship-generated stock label and found that the gaskets were described as "Gasket, Asbestos and Metal". The Storekeeper came into central stores and noticed the label as well and the gaskets were re-packaged. The Storekeeper remained in the area while the FSR proceeded to the engine room to notify one of the Engineers. The Third Engineer came to central stores; advised the Storekeeper that he thought the gaskets were asbestos; retrieved the package of gaskets and took them to show his supervisor, the Senior Engineer. The Chief Engineer was notified of the situation around 1130, and Commanding Officer was notified around 1150. After a discussion with the Storekeeper and the Third Engineer about the events that transpired, central stores was sealed off with plastic sheeting, the door locked and ventilation shut down. The two employees were advised to change clothes and shower. Between the time that the package was opened, and when the space was sealed, the Electrical Officer entered the space work on the desk printer and retrieve parts from stores; he wasn't advised that there had been an Asbestos Containing Material on the desk. His involvement wasn't reported until later.

The Verreault Navigation Safety Officer was notified about the possible asbestos exposure; there were no shippard workers in central stores at the time of the incident.

Construction SOGESCO, attended the vessel on Saturday, July 22, 2017 to conduct a clean-up of the space. We are still awaiting a copy of Mr. Pierre Gagné's certification and report. The drawer where the gaskets were stored was cleaned; all other packages in the drawer were damp wiped; as was the section of the drawer immediately below where the gaskets were stored. The desk, as well as all items on it, was either damp wiped or disposed of; the deck and chair were vacuumed. Two samples of gaskets were taken, one of the ones with the white furry substance and one with a dark grey substance. These were sealed up and retained on board until they could be sent for testing.

The samples were transferred to Groupe EnvironeX on Tuesday, July 25, 2017 for testing. Results were received on July 27, 2017; sample #1 (a grey gasket) tested negative and sample #2 (the white gasket) tested positive for asbestos.

CCGS Sir William Alexander

The CCG employees who were in central stores would have spent only minutes there between the time when the package was open and the space was sealed up. The gaskets were intact and there was no work done with them to cause the fibers to become airborne.

Following the initial incident, the Storekeeper did a computer search in the vessel's Inventory Management System and found additional products with "Asbestos" in the ship generated description. She registered a Refusal to Work with regards to these identified products on July 24, 2017; she was unwilling to open or search through the locations associated with these identified products. Corrective action for the refusal to work was to have samples taken of the products and sent for laboratory analysis; and remaining quantities sealed up until results are received. These actions were sufficient to end the refusal to work.

A technician from Groupe GESFOR Poirier, Pinchin was on board on July 26, 2017 to take a sample of each of the items that were found in the computer search and took them for testing. Additional quantities of these items were sealed up and retained, pending the results of the tests.

This incident has been discussed with a number of interested parties since July 21, 2017. There have been informal discussions with the employees who were onboard; the shipboard management team has consulted with Coast Guard Safety Management and Health Canada in an effort to determine what actions are required to effectively deal with concerns and to prevent a recurrence.

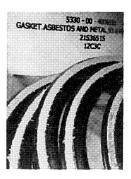


Image 1: Gaskets that were opened up on July 21, 2017.

Findings

- The Asbestos Assessment conducted on March 31, 2006 (initial) could not be easily located on board the vessel.
- The initial Asbestos Assessment included the physical structures in central stores but not the inventory items.
- The FSR for Garlock of Canada for Fairbanks-Morse located the gaskets without supervision and opened the package before noticing they were labelled "Gasket, Asbestos and Metal".
- Two gaskets that were collected on July 21 were sent for testing
 - o sample 1 "Dark Grey" gasket was negative for asbestos
 - sample 2 "Light Grey" gasket contained asbestos in the non-metal portion of the gasket –
 75-90% Chrysotile (test results attached)

CCGS Sir William Alexander

- 27 CCG employees were on board the vessel; only 3 were in central stores from the time the package was open until the space was sealed up.
- 31 products itemized in the vessel's Inventory Management System contain "Asbestos" in the
 description. This number excludes the items inventoried as part of the "Asbestos Abatement Kit".
 16 of these items have not had their descriptions in the computer updated since 2000; 14 of these
 items have no stock history for issue or receipt since 1995.
- Risk level for handling of items in central stores is considered to be low-risk under MOHS regulations (SOR/2017-132 June 20, 2017 Section 243) definitions "low-risk activity (c)"
- Vessel had no Vessel Specific Management Plan until earlier this cycle; vessel had received an NCR during the June 1, 2017 ISM Audit. A draft VSAMP was in development at the time of the incident.
- Unfamiliarity with Asbestos Management resulted in a delay in sealing off central stores with an additional person entering the space
- Test Results for the second batch items sampled on July 26, 2017 are still pending.

Concerns

The lack of Asbestos Awareness Training provided to crew members is of concern to all involved, both crew and management. Lack of knowledge regarding asbestos, particularly the risks involved with safe handling and storage, compounded the situation.

Knowing that the vessel has Asbestos Containing Materials on board, it is vital that crew members know the risks involved as well as how to safely handle the materials. Given that, under the VSAMP, all locations need to be marked as containing ACMs, the Awareness Training is important so that personnel understand that undisturbed, encapsulated asbestos, as is found in several locations on the vessel, is of minimal to no risk.

While reviewing the vessel's training requirements in May 2017, Asbestos Awareness Training was identified as a recommended course for all personnel; this requirement was submitted to the vessel's training coordinator on May 31, 2017.

Recommended Action

- Obtain copies of all Asbestos Assessments and annual surveys completed July 25, 2017.
- Sample and test items identified in the IMS with "Asbestos" in the description collected July 26,
 2017; results are pending.
- Dispose of all Asbestos Containing Products for which an alternative product exists.
- Properly store and label any Asbestos Containing Products for which there is no alternative.
- Update product descriptions in the IMS to remove "Asbestos" from products determined to be Asbestos-Free.
- Ensure that contractors and other non-ship's personnel utilize the services of the Storekeeper or other crew member to access ship's stores.
- Provide all crew members with Asbestos Awareness Training.

CCGS Sir William Alexander

• Provide select members of the crew, including the vessel's Asbestos Coordinator (Chief Engineer) with basic Asbestos Containment and Level I Clean-up Training.

Respectfully,

Carol Dudfield

A/Commanding Officer

CCGS Sir William Alexander

August 1, 2017

Cc: Rod March, Manager, CGSS

Marc Rochon, Health Canada

CCGS-NGCC, Bartlett Chief Officer

From:

Jersch, Russell < Russell.Jersch@dfo-mpo.gc.ca>

Sent:

June-18-18 9:58 AM

To:

CCGS-NGCC, Bartlett Chief Officer

Subject:

RE: Exposure Registry Program

I can't say for sure but we are working on it.

I hope before the end of this patrol.

Russell

From: CCGS-NGCC, Bartlett Chief Officer [mailto:BartlettCHO@ccqs-nqcc.qc.ca]

Sent: June-18-18 7:38 AM

To: Jersch, Russell

Subject: RE: Exposure Registry Program

Ok great thanks,

If I get the question, what will be the time frame to expect this?

Thanks,

Ryan Gurr

Chief Officer, CCGS Bartlett Canadian Coast Guard

BartlettCHO@bar.ccgs-ngcc.gc.ca

Chief Officer Cell: Ship's Cell:

Victoria Base Landline: 250 480 2692

Iridium Satellite:

From: Jersch, Russell [mailto:Russell.Jersch@dfo-mpo.gc.ca]

Sent: June-18-18 7:21 AM

To: CCGS-NGCC, Bartlett Chief Officer **Subject:** RE: Exposure Registry Program

Ryan,

We are working on a more regional response to inform persons who may have been exposed to asbestos. Once its completed it'll be rolled out to the Fleet.

Russell

From: CCGS-NGCC, Bartlett Chief Officer [mailto:BartlettCHO@ccqs-nqcc.qc.ca]

Sent: June-12-18 2:28 PM

To: Jersch, Russell

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Engineer

Subject: Exposure Registry Program

Hello Russell Jersch,

Last week you mentioned an Occupational Health and Safety package would be prepared for the ship for our asbestos exposure. I realize crew change is quickly approaching (tomorrow), and there may not be an opportunity to get the forms before this. As an alternative, I could organize the WCB Registry forms for all the current crew and begin contacting previous crew members. I have also included this form for your records. The Health Canada doctor mentioned registering for the Health Canada Exposure program, but I have been unable to locate this form.

WCB Exposure Registry Program

 $\frac{https://www.worksafebc.com/en/resources/health-care-providers/forms/exposure-registry-program-form-41m1?lang=en}{\frac{1}{2}}$

Thank you for the assistance.

Chris Couch

Chief Officer, Red Crew, CCGS Bartlett

Email: BartlettCHO@ccgs-ngcc.gc.ca

Chief Officer Cell:

Ship's Tellular:

Iridium Satellite:

Mailing Address: 25 Huron Street Victoria BC V8V 4V9

McNish, Joanne

From:

McNish, Joanne

Sent:

Monday, June 18, 2018 3:34 PM

To:

Ayres, Bob; Jersch, Russell

Subject:

Fw: Bartlett/Asbestos/Rumour Mill

Sent by BB

From: McNish, Joanne <Joanne.McNish@dfo-mpo.gc.ca>

Sent: Sunday, June 17, 2018 4:48 PM **To:** CCGS-NGCC, GordonReid Captain **Subject:** Re: Bartlett/Asbestos/Rumour Mill

Hi Nick,

Thanks for raising it. We are working on an information package, to inform crew.

It is not major in so far as all air sampling has come back negative. Asbestos is only a potential hazard when inhaled, where fibres are airborne. Crew are not being advised to get testing, they are just being advised that WCB maintains a self identification site where anyone who feels they may have been potentially exposed can record it, in the event an asbestos related illness would occur many years from now.

All of our older ships have asbestos, and as a consequence, asbestos management plans. If not disturbed, and sealed, it is safe. Onboard the Bartlett, some dust was located a number of months ago in a hard to get to spot. It was tested, and came back positive for asbestos. Air sampling was conducted, both alongside, and at sea, throughout the past period, and came back negative each time. We then made a decision to do 'wipe tests'. Not always recommended, as a horizontal surface could have dust for many years, and not be indicative of a health risk as it has settled, and could even be coated in muck. Some of these tested positive, although the dust was sometimes hard from years of grease/moisture, etc.

Bartlett had a number of areas remediated back in the VLE in the 90's. The current 'speculation' is an area in the stack had hard to reach areas that were poorly remediate in these hard to get to areas, and some fibres may have accumulated, perhaps even early after the VLE. We are now cleaning all areas, and sealing the stack areas of the Bartlett, and to be fully thorough, have replaced pillows, matresses, etc. It is a big project, but we want to be sure there is absolutely nothing onboard, even if some has been there for 20 years or more. Air sampling consistently, with no exception, has been negative for airborne fibres, and sampling was in multiple areas which indicates the risk low. We have hired a company that has allowed us to be very proactive.

We have been working with the Health Canada doctor, who advises the risk very low. As you know, asbestos is a naturally occurring substance, and in our natural environment.

There is no testing being suggested. The information that we are giving employees is, if they wish, they can register on the WCB site. Years ago, when asbestos was identified as being potentially hazardous, WCB set up a Web site for all workers. We will have this information in the bulletin, and it is employees choice on whether to register. The reason CG does not 'keep records' is due to record retention, and privacy of medical information and that it is only potential exposure, not exposure. Employees can also note it on the form with

HC for their medical....have you been exposed to hazardous materials. Employees that he to see, likely, should always indicating yes, given the industrial form of their workplace.

Back in the late 80s, early 90s when we first dealt with asbestos, many people documented. There is considerable more information now. Dr. Kraciew does say that almost all cases of asbestos related illness are associated with asbestos based industry (mines, brake linings, etc), not workplaces, buildings or schools where it was used.

Some people may react angrily. CG has been proactive, and taken steps when noted, and are taking aggressive steps now.

I hope the trip is going well. More comprehensive information to follow.

Joanne

Sent by BB

From: CCGS-NGCC, GordonReid Captain **Sent:** Sunday, June 17, 2018 12:12 PM

To: McNish, Joanne

Subject: Bartlett/Asbestos/Rumour Mill

Joanne

With regard to the Bartlett, I'm starting to get snippits of feedback from the crew about information they are receiving from various sources.

Likely either social media or other forms of contact with people they have worked with.

They are hearing that this is major and that testing is being recommended for crew of the Bartlett.

Many of the crew in fleet have been past crew on the Bartlett for varying amounts of time over the years so this type of conversation is concerning to them.

Is there any kind of fact sheet on what is happening and actions being taken, or other factual information that I can discuss with the crew in order to keep them updated and hopefully prevent any anxiety that the various rumour mills may cause.

Thanks,

Níck

Nicola Mancey

Commanding Officer, CCGS Gordon Reid

Ships Cell
Portable Cell
Iridium

Ships Email: ReidCO@ccgs-ngcc.gc.ca

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.:

566181 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6536374 Client No.: 35254-83b **Location:** Wheelhouse-Fwd Port Window Sill

Area (cm2): 100

Density (s/mm²): <19.2

Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Lab No.:6536375 Client No.: 35254-84b Location: Wheelhouse-Mid Stbd Top Of

Console

Area (cm2): 100

Concentration (s/cm²): 925 Asbestos Type(s): Chrysotile

Density (s/mm²): 19.2

Lab No.:6536376 Client No.:35254-85b Location: Wheelhouse-Mid Stbd Inside Console Concentration (s/cm²): <925

Area (cm²): 100

Density (s/mm²): <15.4

Asbestos Type(s): None Detected

Lab No.:6536377 Client No.: 35254-86b

Location: Wheelhouse-Fwd Stbd Inside Console Concentration (s/cm²): 1850

Area (cm2): 100

Asbestos Type(s): Chrysotile

Density (s/mm²): 19.2

Lab No.:6536378 Client No.: 35254-87b Location: Field Blank Area (cm²): Blank

Density (s/mm²): <15.4

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Signature: Analyst:

Dated: 6/19/2018 11:01:40

Page 1 of 3

s.19(1)

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181

566181 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/19/2018 11:01:40



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13) Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536374 Client No.: 35254-83b

Volume Filtered (mL): 10 Dilution Factor (mL):50 **Grid Openings:4**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):925

Area Sampled (cm²):100

Location: Wheelhouse-Fwd Port Window Sill

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): ≤ 19.2 Structure Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925 Non-Asbestos Type(s):

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

None Detected

Filter Type:MCE

Pore Size (µm): 0.45

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6536375 Client No.: 35254-84b

Volume Filtered (mL): 10 Dilution Factor (mL):50 **Grid Openings:4**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Wheelhouse-Mid Stbd Top Of Console Filter Size (mm²):962

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 925

Asbestos Type(s): Chrysotile

Structure Concentration (s/cm²):<925 Non-Asbestos Type(s): None Detected

s.19(1)

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature: Analyst:

Dated: 6/19/2018 11:01:41

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.:

566181 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6536376

Client No.: 35254-85b

Volume Filtered (mL):8 Dilution Factor (mL):50 **Grid Openings:5**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0650 Sensitivity (s/mm²): 15.4

Detection Limit (s/cm²): 925

Area Sampled (cm2): 100

Location: Wheelhouse-Mid Stbd Inside Console

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <15.4 Structure Concentration (s/cm²): <925

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<15.4 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6536377

Client No.: 35254-86b

Volume Filtered (mL):5 Dilution Factor (mL):50 **Grid Openings:8**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): 100

Location: Wheelhouse-Fwd Stbd Inside Console Filter Size (mm²):962

Asbestos Structures: 2

Structures < 5 Microns: 1 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 1850

Asbestos Type(s): Chrysotile

Filter Type: MCE

Pore Size (μm): 0.45 Non-Asbestos Structures: 1

Structure Density (s/mm²):9.62 Structure Concentration (s/cm²):925

Non-Asbestos Type(s): SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018 06/19/2018

Date Analyzed:

Signature:

Analyst:

Dated: 6/19/2018 11:01:41

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536378 Client No.: 35254-87b

Volume Filtered (mL): 50 Dilution Factor (mL): 50 Grid Openings: 5

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0650 Sensitivity (s/mm²): 15.4 Detection Limit (s/cm²): NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): Blank Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <15.4 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<15.4 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

Signature:

Analyst:

06/19/2018

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Dated: 6/19/2018 11:01:41

Page 3 of 4



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Dated: 6/19/2018 11:01:41

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Ayres, Bob

From:

Ayres, Bob

Sent:

Wednesday, June 20, 2018 4:32 PM

To:

Chaikin, Gabriel

Subject:

RE: Bartlett Air Results June 19

Thanks Gabe.

We don't yet have a firm time from HC. Hoping for tomorrow afternoon but Dr. K still needs to clear something from his schedule. We could possibly go to Friday afternoon.

Those other air samples will likely be guite helpful, thanks.

Bob

From: Chaikin, Gabriel

Sent: Wednesday, June 20, 2018 4:27 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: Re: Bartlett Air Results June 19

Bob,

Apologies. I haven't been ignoring you. Couldn't get the samples on my phone and relief Chief couldn't locate them either. Will get from computer this evening.

What time is the meeting? Noon? I'll do everything I can to be there.

I've explained everything one on one. They aren't interested in the documents though we need to present them to each. He and they will expect to hear it from the authorities.

Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: Ayres, Bob

Sent: Wednesday, June 20, 2018 12:11

To: Chaikin, Gabriel

Subject: RE: Bartlett Air Results June 19

Thanks Gabe. I'll forward this to Dr. Krawciw.

Were there also sample results from earlier in the year? In case he asks for those.

s.16(2) s.19(1)

Bob

From: Chaikin, Gabriel

Sent: Wednesday, June 20, 2018 12:08 PM **To:** Ayres, Bob < Bob.Ayres@dfo-mpo.gc.ca > **Subject:** Fw: Bartlett Air Results June 19

Bob,

Here are the air clearance samples from the beginning of the refit until today.

Please let me know if you require anything more.

Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From:

Sent: Wednesday, June 20, 2018 10:26

To: Chaikin, Gabriel; Jeremy Robinson; CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject: Bartlett Air Results June 19

Good morning, please find attached the air results from yesterday's sampling. All below threshold. Please let me know if you have any questions.

Best,

Project Manager

North West Environmental Group Ltd.



#201 – 415 Gorge Road East Victoria, B.C. V8T 2W1

C:

O: (250) 384-9695 ext. 211

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.

Ayres, Bob

From: Ayres, Bob

Sent: Wednesday, June 20, 2018 12:13 PM

To: 'Krawciw, Don (HC/SC)'

Subject: FW: Bartlett Air Results June 19

Attachments: 35254 AA13 V1.0 2018-06-19 - CCGS Bartlett S#1-58.pdf

Hello Don,

Here are air samples from end of May through June. I've asked for the earlier samples as well and will advise.

Bob

From: Chaikin, Gabriel

Sent: Wednesday, June 20, 2018 12:08 PM **To:** Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca> **Subject:** Fw: Bartlett Air Results June 19

Bob,

Here are the air clearance samples from the beginning of the refit until today.

Please let me know if you require anything more.

Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From:

Sent: Wednesday, June 20, 2018 10:26

To: Chaikin, Gabriel; Jeremy Robinson; CCGS-NGCC, Bartlett Chief Engineer

Cc

Subject: Bartlett Air Results June 19

Good morning, please find attached the air results from yesterday's sampling. All below threshold. Please let me know if you have any questions.

Best,

Project Manager

North West Environmental Group Ltd.



#201 – 415 Gorge Road East Victoria, B.C. V8T 2W1

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C

O: (250) 384-9695 ext.

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Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 19, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Comment	Overloaded with Welding Dust	Overloaded with Welding Dust						Overtoaded with Welding Dust		
6	N/A	N/A	٧	v	٧	v	v	N/A		
v/v	N/A	N/A	>	>	>	>	^	N/A	>	
Concen. (fib/mL)	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	N/A	N/A	2.55	7.01	5.73	8.92	5.10	N/A	3.18	00'0
Volume (L)	1098,62	1082.32	1950	1953.25	1956.96	1982.08	646	130	818.26	0
# # Helds	100	100	100	100	100	100	100	100	100	100
# Hibres	70	OL.	2.0	5.5	4.5	7.0	4.0	OL	2.5	0'0
Time (Mins)	337	332	009	601	604	809	262	40	251	0
Time Off	13:33	13:34	18:07	18:12	18:20	18:29	18:36	14:31	18:42	00:00
Time On	07:56	08:02	08:07	08:11	08:16	08:21	13:44	13:51	14:31	00:00
Avg. Flow Rate (Ipm)	3.26	3.26	3,25	3'52	3,24	3.26	3'52	3.25	3'56	0
Analyst	88	8 8	BR	BR	BR	BR.	BR	BR	BR	æ
Type*	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	8
Area	(AMB) MCR 1	(AMB) AMS 1	(AMB) Aft Oilers Cabin	35254-4a May-31-2018 Jun-01-2018 (AMB) Lounge	(AMB) Bridge	(AMB) Gym	(AMB) MCR 2	(AMB) AMS 2	(AMB) AMS 3	(OC) Field Blank
Date Analysed	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	May-31-2018 Jun-01-2018	Jun-01-2018	Jun-01-2018		Jun-01-2018
Date Collected	35254-1a May-31-2018 Jun-01-2018 (AMB) MCR 1	35254-2a May-31-2018 Jun-01-2018 (AMB) AMS 1	May-31-2018 Jun-01-2018	May-31-2018	35254-5a May-31-2018 Jun-01-2018		May-31-2018 Jun-01-2018	35254-8a May-31-2018 Jun-01-2018 (AMB) AMS 2	May-31-2018 Jun-01-2018	35254-10a May-31-2018
Sample	35254-1a	35254-2a	35254-3a	35254-4a	35254-5a	35254-6a	35254-7a	35254-8a	35254-9a	35254-10a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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LAB# 202314

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Comment	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										/ Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
ბ 01	٧	٧		٧		×	v	v		٧	٧		>		V	٧
w/v	W	^		۸		>	^	^		>	>		Ν		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	00.00	8.92	7.64	12.10	3.18	9.55	5.10	00.00	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133,11	0	942.48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	100	100	100	100	100	001	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	6.0	9.5	2.5	7.5	4.0	0.0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time Off	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2,61	0	2,92	0	2.92	16.1	16.1	0	2,4	2.61	0	2.64	0	2.18	14.41
Analyst	OΓ	JD	ar	BR	BR	BR	BR	BR	BR	JD.	OC	ac	ac	αc	ОС	ЭD
Type*	200	AMB	ъò	AMB	ъъ	AMB	AC	AC	æ	AMB	200	သ	AMB	သ	AMB	AC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance		(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway		(QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	35254-11a Jun-05-2018 Jun-06-2018	3525412a Jun-05-2018 Jun-06-2018	35254-13a Jun-05-2018	35254-14a Jun-06-2018	35254-15a Jun-06-2018	35254-16a Jun-06-2018	35254-17a Jun-06-2018 Jun-07-2018 (AC) Gym	35254-18a Jun-06-2018 Jun-07-2018	35254-19a Jun-06-2018	35254-20a Jun-07-2018	35254-21a Jun-07-2018 Jun-08-2018	35254-22a Jun-07-2018 Jun-08-2018	35254-23a Jun-08-2018	35254-24a Jun-08-2018	35254-25a Jun-09-2018	35254-26a Jun-09-2018 Jun-10-2018
Sample No	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

2/2

1					1														
Comment																		/ Top Level / PAPR	/ 4th Level / PAPR
100	٧	٧	>	>	٧	v	>	>			٧		v	>		٧	>	٧	٧
۸/۸۸ ادمو	×	>	٨	Λ.	٧	>	۸	٧			۸		۸	۸		W	٨	>	>
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22.93	22.29	0.00	00:00	8.28	0.00	21.66	13.38	0.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597,28	2543.41	2512.95	2497.72	0	0	545,49	0	2448	2448	0	22.272.25	2180.75	83.2	72.8
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	505	0	153	153	0	149	143	32	28
Time Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
Time	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (Ipm)	2.1	2.35	15.46	15.23	15.46	15.23	15,23	15.23	0	0	2.61	0	16	16	0	15.25	15.25	2.6	2.6
Analyst	QC	OC	OC	Ωſ	Qſ	Ωſ	Ωſ	ar	ar	ar	Дſ	ar	ac	ar	ar	αſ	Ωſ	Q.	er er
Type*	AMB	АМВ	AC	AC	AC	ΑC	AC	AC	ος	ည	AMB	οc	AC	AC	ည	AC	AC	220	220
Area	(AMB) Poop Deck - Alleyway Adj, Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin		(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	35254-42a Jun-15-2018 Jun-15-2018 (AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	(OCC) Occupational
Date Analysed	Jun-11-2018	35254-28a Jun-10-2018 Jun-11-2018	Jun-11-2018	35254-30a Jun-10-2018 Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	35254-34a Jun-10-2018 Jun-11-2018	Jun-11-2018	35254-36a Jun-10-2018 Jun-11-2018		Jun-12-2018	35254-39a Jun-12-2018 Jun-12-2018	35254-40a Jun-12-2018 Jun-12-2018	35254-41a Jun-12-2018 Jun-12-2018	Jun-15-2018	Jun-15-2018	35254-44a Jun-15-2018 Jun-15-2018	35254-45a Jun-15-2018 Jun-15-2018
Date Collected	35254-27a Jun-10-2018 Jun-11-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018 Jun-11-2018	Jun-10-2018	Jun-10-2018	35254-35a Jun-10-2018 Jun-11-2018	Jun-10-2018	35254-37a Jun-12-2018 Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Sample No	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



PAT PROGRAMS
AINA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

3/2

001286

Type*
AMB JD 2.4
o ar o
AC JD 8
AC JD 8
o ar oo
AC BR 15,49
AC BR 15.49
AC BR 15.49
AC BR 15,49
QC BR 0
o BR 0
AMB BR 2.45
OC BR 0

PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRANS

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

LAB# 202314

4/5

001287

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

Ayres, Bob

From:

Ayres, Bob

Sent:

Wednesday, June 20, 2018 11:09 AM

To:

'Krawciw, Don (HC/SC)' RE: Bartlett Asbestos

Subject: Attachments:

Scanned from a Xerox Multifunction Printer.pdf

Hopefully this one works

From: Ayres, Bob

Sent: Wednesday, June 20, 2018 10:41 AM

To: 'Krawciw, Don (HC/SC)' <don.krawciw@canada.ca>

Subject: RE: Bartlett Asbestos

Of course. Let me know if this does not work.

Bob

From: Krawciw, Don (HC/SC) < don.krawciw@canada.ca>

Sent: Wednesday, June 20, 2018 10:25 AM **To:** Ayres, Bob < Bob.Ayres@dfo-mpo.gc.ca>

Subject: RE: Bartlett Asbestos

Hi – can you resend the document "3rd office cabin AC dust"? I cannot open

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)
Health Canada / Government of Canada
don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)

Santé Canada / Gouvernement du Canada

don.krawciw@hc-sc.gc.ca / Tél.: 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]

Sent: 2018-06-13 4:26 PM **To:** Krawciw, Don (HC/SC) **Subject:** RE: Bartlett Asbestos

Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Hi again Don,

We have decided to do up a regional bulletin for awareness of employees, regarding asbestos and lead paint.

In that bulletin we would like to include a little bit of background to the issues – perhaps something along the lines of what was discussed on Friday touching on uses and presence of these products in the workplace, the changes in thresholds over the years and to attempt to place risk and potential exposure in context, etc.

We hope to have this bulletin ready for distribution by the later part of next week at the latest.

The attached IIRs and lead paint result were received by our office on Tuesday of this week and may provide additional context.

Regards, Bob

From: Ayres, Bob

Sent: Monday, June 11, 2018 3:20 PM

To: 'Krawciw, Don (HC/SC)' < don.krawciw@canada.ca>

Subject: RE: Bartlett Asbestos

Thanks Don – will do.

Bob

From: Krawciw, Don (HC/SC) <don.krawciw@canada.ca>

Sent: Monday, June 11, 2018 2:47 PM

To: Ayres, Bob < Bob.Ayres@dfo-mpo.gc.ca >

Subject: RE: Bartlett Asbestos

Thanks Bob – I've forwarded this along – please check back with me in 2 weeks if you haven't heard from me or someone at Health Canada before then.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM Occupational Health Medical Officer, Public Service Occupational Health Program (BC) Health Canada / Government of Canada don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B) Santé Canada / Gouvernement du Canada

don.krawciw@hc-sc.gc.ca / Tél.: 250-363-3566 / Téléc: 250-363-3668

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From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.qc.ca]

Sent: 2018-06-11 12:47 PM

Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

To: Krawciw, Don (HC/SC) **Subject:** Bartlett Asbestos

Hello Don,

Apologies for delay in getting this to you today – morning got busy.

Attached are the reports from testing on Bartlett.

- 1. AB1 is the bulk sample from May 17th
- 2. ABWIPE1 is wipe test from various locations on board report date May 23rd
- 3. Pb1 is the lead sample from paint on metal report date May 21st
- 4. 551806441 is the more recent dust sampling (collected May 31st) which includes the results from the stack (funnel) on Bartlett

As discussed we'd be very interested in the assistance of your industrial hygienist in providing a review of these sampling results.

Any expert of informed opinion would be welcome with regard interpretation of the numbers in the various reports and the likely meaning of these to our employees who have potentially been exposed.

Cleaning and remediation efforts are currently underway. We are considering how best to communicate further to employees past and present regarding potential exposure and documenting of this potential in case (hopefully not) of need for future claim etc.

Thanks again for coming down and speaking with our people on Friday. It was very helpful.

Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

Fisheries and Oceans Canada Canadian Coast Guard

INCIDENT INVESTIGATION REPORT (IIR) 9.B.1 NOTE: If this incident falls under the definition of a reportable Marine Occurrences as per Transportation Safety Board (TSB) Regulations, Section 3(1), a Report of a Marine Occurrence form shall be completed within 30 days of the occurrence. A. Type of Incident (Required) (Choose only one) Disabling Injury (visit to medical professional, time lost) Loss of Consciousness due to electric shock or toxic atmosphere ☐ First Aid ☐ Near Miss Minor Injury (visit to medical professional, no time lost) ☐ Pollution Activation of an Emergency Procedure Property Damage Fire or Explosion (Shore only) ☐ Other (specify) B. General Information (Required) Employer's (Department) Name Site/Vessel Name (and official number) Canadian Coast Guard CCGS Bartlett Date of Report (YYYY-MM-DD) 2018-06-11 Mailing Address 25 Huron Street Victoria BC V8V 4V9 Name of Responsible Supervisor Captain Mike McCullagh Supervisor's Telephone # 250-213-3864 Organization (Select One) ☐ National HQ Coast Guard College Region (if selected, choose Directorate and Program/Branch below) Regional Directorate (Select One) ☐ AC's Office ☐ Fleet ☐ IBMS □ ITS ☐ Incident Management ☐ Navigational Programs Program/Branch (Select One) ☐ AtoN MarSup Refit and Maintenance ☐ Canso ☐ MCI □ ROC □ CGSS ☐ MCTS ☐ SAR □ E&I ∏ ME ☐ Science ☐ EFM (C&P) MNS Vessels of Concern ☐ ER ☐ MSET ☐ Other ☐ Ice Ops Business □ILS C. Employee Data (As Required) * (to be completed only if the employee sustains an injury). * To be completed by the injured employee's supervisor or their designate. All fields shall be completed. Surname Given Name Initial(s) Age Gender Job Title Years of experience in current ☐ Female □Male position **Employment Status** Indeterminate ∏Term □Casual/Relief ☐Program Client ☐ Student ☐ Contractor Other (Specify)

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Page 1 of 6

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	Fisheries Canadian	and	Oceans	Canada
	Canadian	Cos	ast Guar	d
	 	***********	***************************************	***************************************

D. Incident Info	rmation (Require	ed)				
Did this involve a	motor vehicle* a	cident? Yes		yes, please ensure templeted.	he <u>Motor Vehicle Accid</u>	ent (MVA) Report is
Did this involve H	elicopter Operati	ons? Yes			Small Craft Operation	s? Yes □ No
					our, latitude, longitude it	
	de Victoria Coast			•		
Date of Incident (уууу-мм-DD) [2	018-06-06		Time of Incident	(Local) 17:00	
Body part injured	L.					
Abdomen	Back		☐ Eye	□ Neck	☐ Knee	Pelvis / Groin
□Am		stem / Internal	□ Foot	☐ Head	□ Leg	☐ Shoulder
☐ Auditory	☐ Chest		□ Hand	П Нір	☐ Multiple injuries	
Nature of injury (i	hammad			raj , ak		
∏ Burns				☐ Multiple Injuri	es ·	
_ П Fractures					nt/ligament and muscle/l	endon iniurv
☐ Injury to Nerv	es and Spinal Co	rd			erations and Amputation	
☐ Intracranial In				Unknown		
E. Investigation		auired)				
Type of Event						
☐ Caught in or b	etween	ПЕ	posure to a	traumatic event	☐ Slips, trips and	falls
	narmful substance			uipment Failure	Struck by or ag	
☐ Exposure to E		Second 1		harm unknown	☐ Vehicle incident	
☐ Exposure to F		********	verexertion			
☐ Exposure to h		•	epetitive Mot	on		
☐ Exposure to n		•			Unknown dust ide Asbestos	ntified as containing
June 6, 2018 Du fridge came back	the investigation st wipe results fo	or photos as re r samples take estos structure	n on May 31 s per cm2.	were received. The	diagrams, location of a dust wipe sample taken mal experienced standa	on the 3rd Officer's
Inspection of the containing Marin	cabin found ther ite bulkhead linin ork procedures w	e were 6 screv g panel. Two	holes within of the six look	s as if the screws w	cation. The holes were ere pulled from the pane et wipe the effected area	1.
Attached: EMSL Canada II Photo of bulkhea	nc Dust Wipe Res	sults				
Was a Risk Asse	ssment performe	d prior to comm	nencement o	f the task which resu	Ited in the incident?	☐Yes ⊠
Specify						
Pre-job safety as	ssessment perfor	med by clean-u	ıp/repair crev	V.		
u Was accident pre	vention training p	provided in rela	tion to the du	ities of the injured en	nployee prior to the incid	lent? ☐Yes ⊠

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Specify	
Immediate/Disect Corres (Beggined) (Chack all	(het costs)
F. Immediate/Direct Causes (Required) (Check all Substandard Actions	Substandard Conditions
Bypassing safety devices	Congested or restricted area
Failure to check or monitor	Defective tools, equipment or materials
☐Failure to communicate/coordinate	Excessive noise
Failure to follow procedure/policy	Heat/cold exposure
⊠Failure to identify hazard/risk	☐Inadequate/improper PPE or use of PPE
Failure to react/correct	Inadequate communication
Failure to service equipment properly	☐ Inadequate guards or barriers
Failure to use PPE	☐ Inadequate information/data
Failure to warn or secure	☐ Inadequate instruction/procedure
Horseplay	Inadequate preparation/planning
Improper lifting	Inadequate support/assistance
Improper loading, placing, mixing	Inadequate ventilation
Improper position/posture for task	☐Inadequate warning system
Operating at improper speed	Lack of tools, equipment or materials
Using defective equipment	☐Poor housekeeping
Using equipment improperly	
☐Other action (Specify)	Radiation exposure
	☐Uneven ground/terrain
	Weather or environmental conditions
	Other condition (Specify)
DOLL CHEST	
mmediate/Direct Causes (Required)	
Of the above checked immediate/direct causes prov	ride details as to which one was the leading cause of the incident.

	Fisheries Canadian	and	O	ceans	Canada
	Canadian	Coa	ıst	Guard	1

G. Basic/Root Causes (Requi	red) (Check all that apply		
Personal Factors		Job Factors	
☐Emotional stress		Abuse or misuse of e	quipment
Fatigue		☐Inadequate engineer	ing or design
□Lack of knowledge and/or sk	x ill	☐Inadequate hazard a	ssessment
☐Physical stress or capability		☐Inadequate personne	I to complete task
☐Rushing or inattention		☐Inadequate tools/equ	ipment/materials
☐Other (Specify)		☐Inadequate training a	nd/or familiarization
		□ Inadequate work star	하면서 하는 이 마음이 되면 보면 됐습니다. 그는 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그
			of procedure or supervision
		Standards/procedure	s not developed
		☐Wear and tear	
		Other (Specify)	
Basic/Root Causes (Required	1		
Commanding Officer's Standing consultation with both Commar Safety Manual S1-07 Asbestos	g Orders B10-S3-02 Acc nding Officers. Containing Materials. V	Vork on ACM requires authorization	modification are not permitted without on from Chief Engineer.
H. Witnesses (As Required) (Information)	NOTE: Witness statements	may be required depending on the se	everity of the incident – Attach all additional
Name of Witness # 1	Telephone #	Name of Witness # 3	Telephone #
Matthew Jackson CE	250-882-1273		
Name of Witness # 2	Telephone #	Name of Witness # 4	Telephone #
Steve Buss SE			
I. Property / Equipment Dama	ige (As Required)		
Nature and extent of property	damage		Estimated Cost (\$)
None.			
J. Corrective & Preventative I recurrence)	Measures (Required) (D	escribe corrective measures take	n and/or recommended to prevent
Air clearance and visual inspec	abin clean up with oversign ction by NWE passed.	ght from NWE after crew's cleanu	
Corrective action responsibility	assigned to	Date to be completed (YYYY-MM-	DD) Follow-up Date (YYYY-MM-DD)
Chief Engineer/Chief Officer		2018-07-11	2018-07-11
L		/ 	

	Fisheries	and	Oceans	Canada
	Fisheries Canadian	Coa	ast Guar	d

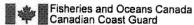
K. Investigatio	n Completed By (Require	d)			
Name of perso	n investigating	Telep	hone #	Signature	
Matthew Jacks	on	250-8	82-1273	Matt Jackso	Digitally signed by that Scholans On in-The Assemble in-Charles County County Transport County Transport County C
Title Chief Eng	jineer		Date (YY	YY-MM-DD)	2018-06-11
Email address	BartlettCE@ccgs-ngcc-gc	.ca			
Investigators of	omments				
	amination identified, cleane				
L. Workplace C	OHS Committee / Health a	nd Safety Repre	sentative Part	ticipation (Required	
Workplace OHS	Committee Member / Hea	Ith and Safety Re	presentative Ir	nformation	
Name		Telep	hone #	Signature	
Steve Buss		250-2	13-3685	Steve Buss	Digitally regional by Stores States 234 Invitations Black Procured from Count Invitation processing of the County County County Date 2016/08/12 12:23 15:40/000
Title		Email	address		Date (YYYY-MM-DD)
Senior Enginee		Bartle	ttSE@ccgs-ng	cc.gc.ca	2018-06-12
M. Commandir	ng Officer or Superintend	ent/Manager (Re	equired)		
Name of Comr	manding Officer / Responsil	ole Manager T	elephone #	Signature	Latin Charles and Charles
Mike McCullag	h	2.	50-882-3864	Michael Mo	Cullagh
Title		E	mail address		Date (YYYY-MM-DD)
Commanding (Officer	bi	artlettCO@ccgs	s-ngcc-gc.ca	2018-06-12
las the relevant	task(s) on the Site Specific R	lisk Register been	reviewed and/or	modified as a result of	f the incident?
Additional com	ments to include additions,	deletions or char	nges to correcti	ve action recommend	dations from Section "J"
without consult		ng Officers.			in modification are not permitted ation from Chief Engineer.

Privacy Notice

The personal information provided on this form is collected under the authority of the Financial Administration Act, the Public Service Labour Relations Act and

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Failure to provide the personal information requested on this form may compromise individual safety or compensation claims and the health and safety efforts of the Department.

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McNish, Joanne

From:

Ayres, Bob

Sent:

Wednesday, June 20, 2018 12:48 PM

To:

McNish, Joanne; Jersch, Russell

Cc: Subject: Ormiston, Glenn

RE: Draft bulletin

Thank you Joanne,

I've incorporated your suggestions.

I'll look to tweak the wording regarding the other testing. Are there particular concerns regarding the testing or results or is the intent just to reinforce the efforts underway?

I spoke briefly with Dr. Krawciw and he is currently reviewing the air sampling results (he wanted to be fully comfortable with the very low risk statement). Assuming he agrees to our language, yes I will ask the AC to approve and we can send it to all.

Regards,

Bob

From: McNish, Joanne

Sent: Wednesday, June 20, 2018 12:11 PM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>; Jersch, Russell <Russell.Jersch@dfo-mpo.gc.ca>

Cc: Ormiston, Glenn < Glenn.Ormiston@dfo-mpo.gc.ca>

Subject: Re: Draft bulletin

Bob,

Very well presented. I have a few suggested edits for the 3 introduction paragraphs, in red below.

I also think it is worthwhile to add a paragraph on the different tests, including wipe samples, etc. There is some misinformation currently circulating.

To confirm, we will finish this today, have Kevin sign, and send to all staff from AC?

Thank you

Joanne

Issue

Increased awareness for both Fleet and shore based employees as to the presence of asbestos containing materials (ACM) and lead paint in older CCG ships and structures as a result of recent findings on the CCGS Bartlett.

Target Audience

Canadian Coast Guard personnel, most notably those with potential exposure to hazardous materials, specifically asbestos and lead paint, in the course of their work.

Purpose of Bulletin

The purpose of this bulletin is to inform employees of the potential of these hazardous materials in many of our workplaces, to identify the risks and mitigation measures, provide information, identify appropriate controls and to outline options for documentation of potential exposure.

Sent by BB

From: Ayres, Bob

Sent: Wednesday, June 20, 2018 8:32 AM

To: 'Krawciw, Don (HC/SC)'; McNish, Joanne; Jersch, Russell

Subject: RE: Draft bulletin

Based in part on early feedback and internal review I've revised the draft. If reviewing now please refer to this version dated June 20th.

Bob

From: Ayres, Bob

Sent: Tuesday, June 19, 2018 3:30 PM

To: 'Krawciw, Don (HC/SC)' < don.krawciw@canada.ca; McNish, Joanne < Joanne.McNish@dfo-mpo.gc.ca; Jersch,

Russell < Russell Jersch@dfo-mpo.gc.ca>

Subject: Draft bulletin

Hello,

Attached is a draft of the bulletin for review and comment.

Don, I would be interested in your and your hygienists opinion regarding the bulletin overall but in particular those statements where I have referred to Health Canada perspective and roles.

Joanne and Russell, do you feel we have the tone right in this?

Thank you, Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Ayres, Bob

From:

Ayres, Bob

Sent:

Thursday, June 21, 2018 11:01 AM

To:

McNish, Joanne; Jersch, Russell; Ormiston, Glenn; Bennett, Bob; Readman, Tristan; Kellow, Graeme; Lawson, Jesse; Specht, Rick; Granger, Louise Anne; Chaikin, Gabriel

Cc:

CCGS-NGCC, Bartlett Captain (BartlettCO@ccgs-ngcc.gc.ca); CCGS-NGCC, Bartlett Chief

Engineer (BartlettCE@ccgs-ngcc.gc.ca)

Subject:

Health Canada Asbestos Discussion - Vic Base - Friday June 22 at 1330, Shop's

Lunchroom

Hello All,

Dr. Krawciw from Health Canada has confirmed that he can attend at Vic Base for another discussion related to the asbestos situation on the Bartlett. We will use the shop's lunchroom once again and will start at 1330.

Gabe, as before it would be helpful to have the specialists from NW Environmental attend as well. Their perspective was appreciated.

This is also an opportunity for other groups with similar concerns from other work environments to listen in and ask related questions.

Regards, Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

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Ayres, Bob

From:

Ayres, Bob

Sent:

Thursday, June 21, 2018 10:14 AM

To:

'Krawciw, Don (HC/SC)'

Subject:

FW: Bartlett air results Feb 9

Attachments:

34741 AA1 V1.0 2018-02-09 - CCGS Bartlett Air Monitoring at Sea S#1-13.pdf

One more air sample result from Feb.

Bob

From: Chaikin, Gabriel

Sent: Thursday, June 21, 2018 9:57 AM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: Fw: Bartlett air results Feb 9

Hi Bob,

Good day. Please see attached air results from Feb 9th of this year.

Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: McMillan, Cody < cody.mcmillan@dfo-mpo.gc.ca >

Sent: Thursday, June 21, 2018 09:54

To: Chaikin, Gabriel

Subject: FW: Bartlett air results Feb 9

Cody McMillan Marine Engineering | Ingénierie navale (250) 363-8533

From: CCGS-NGCC, Bartlett Chief Engineer < BartlettCE@ccgs-ngcc.gc.ca>

Sent: February-09-18 9:51 PM

To: CCGS-NGCC, Bartlett Captain < <u>BartlettCO@ccgs-ngcc.gc.ca</u>>; Chaikin, Gabriel < <u>Gabriel.Chaikin@dfo-mpo.gc.ca</u>>;

McMillan, Cody < cody.mcmillan@dfo-mpo.gc.ca>

Cc: Wright, Edward < Edward.Wright@DFO-MPO.GC.CA >

Subject: FW: Bartlett air results Feb 9

We are heading out.

I think today's testing and results were worth the time and money to help answer questions about our living/working conditions onboard.

s.16(2) s.19(1) Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Matt Jackson Chief Engineer CCGS Bartlett Cell:

BartlettCE@ccgs-ngcc.gc.ca

From:

Sent: February-09-18 9:40 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: Joel Shandro; Grant Rogers; Julie Scott-Moncrieff

Subject: Bartlett air results Feb 9

Hi Matt, please find attached the lab results from today's at sea testing. We met the minimum volume and all samples were less than 0.01 fibres per mL, under WorkSafeBC limits.

Regarding the Engine Room, we do not think additional testing is required at this time. The dust is generally not loose and there is a lot of fresh air flow through the space, reducing the concentration of any fibres that might be rendered airborne. Air results in the MCR and the short sample in the Engine Room corroborate this. We recommend additional surface testing when the vessel returns, to see if there is a gradient or potential source.

At this time, we are not recommending further testing and see no cause for the vessel to be held up any longer.

Please let me know if you have any questions.

Best,

Get Outlook for iOS

Pages 1303 to / à 1304 are duplicates of sont des duplicatas des pages 612 to / à 613 Ayres, Bob

From:

Ayres, Bob

Sent:

Thursday, June 21, 2018 6:58 AM

To:

Mah, Richard

Subject:

RE: Worksafe BC Exposure Registry

Good morning Richard,

Are you able to confirm that these Exposure Registry confirmations should go to your office, for the record?

We have not yet sent the notice but hope to do so soon.

Thank you, Bob

From: Ayres, Bob

Sent: Tuesday, June 19, 2018 1:02 PM

To: Mah, Richard < Richard. Mah@dfo-mpo.gc.ca>

Cc: Luu, John <John.Luu@dfo-mpo.gc.ca>; Clements, Brian <Brian.Clements@dfo-mpo.gc.ca>; Shivji, Yasmin

<Yasmin.Shivji@dfo-mpo.gc.ca>

Subject: Worksafe BC Exposure Registry

Hello Richard,

We have an ongoing asbestos issue in some of our worksites and recently some of our folks have become aware of the Worksafe BC Exposure Registry.

As some of our employees have we believe started to use this online form we are preparing to send out a note (within a day) to employees clarifying how this should be done. The point in question is that the online form includes "Employer Information" and asks for the firm name and address. Our thinking is that may best be entered as Department of Fisheries and Oceans, Safety & Health Services, #200 – 401 Burrard St. etc.

I've confirmed with the registry that they do mail back a confirmation to both the employee and the employer. Would you agree that these should go back to your office as the keeper of our Worksafe data?

Thanks very much, Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636

E-mail: bob.ayres@dfo-mpo.gc.ca

Dos.19(4)nt Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Ayres, Bob

From: Ayres, Bob

Sent: Thursday, June 21, 2018 6:46 AM

To: 'Krawciw, Don (HC/SC)'

Subject: FW: Bartlett Asbestos Update

Attachments: Background Air Testing Results.pdf; Background Testing proposal.pdf; Initial WH Wire

Insulation Test Results.pdf; Laundry Room Air Test Results after first cleanup.pdf; Laundry Room Dust Test Results.pdf; NWE Risk Assessment and Safe Work Procedures for abatement work.pdf; Pyrometer Wire and Packing Test Results.pdf; Wheelhouse

Consol Dust Test Results.pdf

Some additional samples and related documents (though some may be repeats to what you have) and correspondence between ships engineers.

Bob

From: Chaikin, Gabriel

Sent: Wednesday, June 20, 2018 8:35 PM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>
Subject: FW: Bartlett Asbestos Update

Bob,

This is some context provided from Matt Jackson in February for the testing conducted to that point.

Regards,

Gabe

From: CCGS-NGCC, Bartlett Chief Engineer [BartlettCE@ccgs-ngcc.gc.ca]

Sent: February 5, 2018 11:02 AM

To:

Cc: Chaikin, Gabriel

Subject: Bartlett Asbestos Update

Hi Ross,

but I would like to update you on the asbestos situation onboard.

The wire insulation you had tested at the end of you patrol came back positive for Chrysotile asbestos in the insulation (not the insulation covering).

We had NWE come in and perform dust sampling in the wheelhouse consoles to check for contamination. IIR submitted prior to receiving results. There was a mistake at the lab and the first set of samples were not analyzed with the correct procedure.

During a short sea trial period we contacted the dock in way of the aft port hole in the laundry room. Minor deformation of the shell plating but the movement split a bulkhead seam and caused a crack in one of the ACM panels in the laundry room. The space was closed off after discover and Canadian Hazmat called in to clean up and encapsulate. IIR submitted. Post clean-up air test proved good but some dust behind the washing machines was not cleaned so samples were taken to determine if additional cleaning was required. This happened at the same time we found out about the mistake at the lab for our bridge dust samples.

Documentation Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Consoles resampled and results were expected the afternoon after we sailed.

First set of results were received and the dust behind the washing machines showed moderate contamination above normally experienced levels (International Asbestos Testing Laboratories) having not received the results from the bridge the plan was to proceed to the Port Hardy to have additional work performed. We received the results from the Bridge a couple hours later and they return with high levels of contamination in the dust present on the consoles. The decision was made to return to Victoria for further testing and development of an abatement plan.

NWE developed a Background Sampling plan which included dust wipes in the MCR,ER and HVAC return air duct as well as 10 air sampling locations throughout the ship. We are still awaiting the results of the dust wipes (Tuesday morning/afternoon).

The air sampling results are attached. During both days of air testing the ship was occupied with normal traffic, ventilation systems were operated as per normal, and the main engines and generators were run for apx 2hours each day to increase vibration throughout the ship. As per NWE: As before(the first days lower volume samples) all air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). Some of the additional samples were above the limit of detection (LOD) and all were still below the limit of quantitation (LOQ). Sufficient air volume was collected per the method during routine occupation of the vessel and results are below WorksafeBC exposure limits.

Additional ACM identified: the wiring for the old pyrometer display contains 30% Chrysotile. Packing storage in the STBD MCR some of the old white packing contains 30% Chrysotile.

NWE is providing oversight and air clearance for the following abatement jobs performed by Canadian Hazmat:

- -wheelhouse including consoles
- -wheelhouse void as the console wire ways to this space are not sealed and the space contains significant unidentified dust
- -laundry room (moving machines to continue wipe down)
- -ER pyrometer wire removal
- -MCR console dust and pyrometer wire removal
- -STBD MCR stores disposal of packing and cleanup of adjacent area

The first day of abatement was yesterday with work proceeding on the bridge. As now the anticipated completion time for the clean-up is Friday.

Please let me know you thoughts, comments or concerns. I have cc'd Gabriel as he is taking over from Cody for the week.

Matt Jackson Chief Engineer CCGS Bartlett

Cell:

BartlettCE@ccgs-ngcc.gc.ca



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 03, 2018

Client Job or PO#: NEED

Project number: 34694

Concen. V/W LOQ (fib/mt) (fib/	ŧ			<u> </u>	<u></u>		<u> </u>	<u> </u>	<u> </u>	<u> </u>	Ī
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Type* Analyst Rate (Ipm) Time Rate (Ipm) Time Off (Ipm) Time (Ipm) Time (Ipm) Time (Ipm) Time (Ipm) Time (Ipm) Time (Ipm) Tipme (Ipm)	Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Type* Analyst Prov. (Pm) Time Off (Mins) Time (Mins) Fibres Fields (Mins) # # vo (Mins) # # vo (Mins) # # wo (Mins) # # # # wo (Mins) # # # # wo (Mins) # wo (Mins) # # wo (Mins)	Density (fib/mm2)	0.64	5.10	3,82	2.55	3.82	3.18	4,46	4.46	16.1	7.01
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Type* Analyst Rate (Ipm) Type On (Ipm) Time Off (Ipm) Off (Ipm) </td <td># Fibres</td> <td>0.5</td> <td>4.0</td> <td>3.0</td> <td>2.0</td> <td>3.0</td> <td>2.5</td> <td>3.5</td> <td>3.5</td> <td>1.5</td> <td>5.5</td>	# Fibres	0.5	4.0	3.0	2.0	3.0	2.5	3.5	3.5	1.5	5.5
Type* Analyst Row (Ipon) Avg. (Ipon) Time (Ipon) AMB JD 2.04 12:05 AMB JD 5.12 11:33 AMB JD 5.04 11:05 AMB JD 2.04 11:22 AMB JD 2.04 11:22 AMB JD 2.61 11:19 AMB JD 5.1 11:07 AMB JD 2.5 10:59 AMB JD 2.5 10:55 AMB JD 2.3 11:54 AMB JD 2.3 11:54 AMB JD 2.3 11:54	Time (Mins)	127	193	185	159	159	337	177	172	304	152
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AMB JD AM	Time	12:05	11:33	11:42	11:22	11:19	11:07	10:59	10:55	11:54	11:47
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Sample Date No No Collected 34694-3a Feb-02-2018 34694-6a Feb-02-2018 34694-6a Feb-02-2018 34694-6a Feb-02-2018 34694-7a Feb-02-2018 34694-9a Feb-02-2018 34694-10a Feb-02-2018 34694-11a Feb-02-2018 34694-12a Feb-02-2018	Date Analysed	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018
Sample No No 34694-3a 34694-5a 34694-6a 34694-8a 34694-9a 34694-10a 34694-11a 34694-12a	Date Collected	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018	Feb-02-2018
	Sample		34694-4a	34694-5a	34694-6a	34694-7a	34694-8a		34694-10a	34694-11a	34694-12a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Volume (L)	0	2006.88	1521.52	1493.52	1498.6	1496.06	1493.52	1483.36	1470.66	1483.36	1483.36	1469.16	0	0
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# Fibres	0.0	6.5	4.5	4.0	4.5	5.5	7.5	6.0	15.0	2.0	2.0	7.0	2.0	1.0
Time (Mins)	0	148	616	588	290	289	288	584	579	584	584	583	0	0
Time Off	00:00	16:55	18:42	17:43	17:40	17:55	17:45	18:00	17:51	17:49	17:45	18:04	00:00	00:00
Time	00:00	14:27	08:26	07:55	02:20	90:80	25:20	08:16	08:12	98:05	10:80	08:21	00:00	00:00
Avg. Flow Rate (ipm)	0	13.56	2.47	2.54	2.54	2.54	2,54	2.54	2.54	2.54	2.54	2.52	0	0
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Date Analysed	Feb-02-2018	Feb-02-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018
Date Collected	34694-13a Feb-02-2018	Feb-02-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	34694-27a Feb-03-2018 Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	Feb-03-2018	34694-32a Feb-03-2018	34694-33a Feb-03-2018	Feb-03-2018	Feb-03-2018
Sample No	34694-13a	34694-23a	34694-24a	34694-25a	34694-26a	34694-27a	34694-28a	34694-29a	34694-30a	34694-31a	34694-32a	34694-33a	34694-34a	34694-35a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

PAT PROGRAMS AILY PROFILE TESTING PROGRAMS

LAB# 202314

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*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker) AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL. - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml. (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

Z As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation,

PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314



201 – 415 Gorge Road East Victoria BC V8T 2W1

> Tel: 250-384-9695 Fax: 250-384-9865

e-mail:

File No. 34694 P1 V1.0

Via Email

1 February 2018

Matt Jackson Canadian Coast Guard 20 Huron Street Victoria, BC, V8V 4V9

Attention: Matt Jackson, Chief Engineer

Re: Proposal for Background Asbestos Testing on the CCGS BARTLETT

North West Environmental Group Ltd. (NWest) is pleased to present a proposal for background testing throughout the vessel to look for evidence of the spread of asbestos contamination. The Bartlett is alongside at 20 Huron Street in Victoria, BC. NWest will undertake surface testing to characterize the asbestos content of latent dust and air monitoring to determine whether fibres have been rendered airborne during normal ship use while alongside.

Scope of Work

The ambient air sampling and surface wipe sampling plan is summarized in the following table. Note that sample quantities are approximate as site conditions may require additional sample collection.

DECK	LOCATION	AMBIENT AIR SAMPLING	SURFACE WIPE SAMPLING
Above Tank Top	Engine Room	0	4
	Control Room	1	2
Upper Deck	Alleyway	2	0
	Bosun's Cabin	1	0
	Crew Cabin	1	0
Poop Deck	Alleyway	1	0
	2 nd Officer's Cabin	1	0
	Lounge	1	
	Return Air Vent	0	1
Boat Deck	Alleyway	1	0
	Chief Officer's Cabin	1	0
	Estimated totals	10 + 2 field blanks	7 + 2 field blanks

Estimate

NWest will complete the above noted scope of work on a Time and Materials basis, estimated to be \$7712, taxes not included. Site work will be conducted during a work week day, during regular hours (8 am- 5 pm). Costs for work conducted on overtime, weekend and or statutory holidays is not included. A breakdown of budget estimate is as follows.



s.19(1) s.20(1)(b)

s.20(1)(c)

Background Asbestos Testing CCGS BARTLETT

NWest Project No. 34694 February 1, 2018

ITEM	TASK	UNITS (ESTIMATE)	RATE	EXTENTION
1	Project Manager: project design, coordination, travel, site work.	24 hours	per hour	
2	Project Manager: reporting	8 hours	per hour	
3	Senior Project Manager: review, consultation	4 hours	; per hour	^^^
4	Principal in Charge: review, consultat	ion 3 hours	per hour	
5a	Sample Analysis: Ambient Air	12 samples	each	
5b	Sample Analysis: Ambient Air (addition samples, if required due to site conditions)		each	TBD
6	Sample Analysis: Surface Wipe	9 samples	each	
7	Disbursements (mileage, courier, communication)	1		
	ESTIN	IATED TOTAL, taxes extr	a	\$7712

Limitations

The following limitations apply:

- 1. NWest requires safe access to compartments.
- 2. NWest requires access to electrical outlets to run air monitoring pumps.
- 3. NWest is not responsible for costs incurred due to delays in shipping, travel, or delivery of analytical results from laboratories. Additional costs are the responsibility of the client.
- 4. Mileage fees are waived.
- 5. Work is Monday to Friday between 8 am and 5 pm. Overtime excluded.
- 6. These types of testing may not be able to determine the source of asbestos contamination, but rather, will be able to determine whether contamination exists.

NOTE: Sampling pumps are noisy. NWest will coordinate with CCG to determine the least intrusive locations to sample in, while maintaining the integrity of the sampling plan.

NWest carries \$5 million Liability, \$5 million Pollution Liability and \$5 million Errors and Omissions Insurance.

Our WorkSafeBC number is 436736.

We hope this information is helpful to you and we look forward to working with you.

Yours truly,



Project Manager





Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Date: January 24, 2018

Project number: 34596 Client Job or PO#: NEED Project: CCGS Bartlett Wheelhouse Wire Testing 2018-01-22

						Ī					
Sample No	Location	Date Analysed	Anelyst	Description	Phase	*	Asbestos	*	Other Materials	8	Comments
34596-1b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	Œ	Wire (Green)	Wire Wrap - Green	8	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-1b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	OC	Wire (Green)	Wire Insulation - Black	8	None Detected	0	Non-Fibrous	100	
34596-2b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	Qſ	Wire (Dark Grey)	Wire Wrap - Black	8	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-2b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	αr	Wire (Dark Grey)	Wire Insulation - Black	09	None Detected	0	Non-Fibrous	100	
34596-3b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	αr	Wire (Black)	Wire Wrap - Black / White	9	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-3b Layer 2	WH Fire Detection Console Panei	Jan-24-2018	Ωſ	Wire (Black)	Wire Insulation - White	9	Chrysotile	20	Synthetic	30	
34596-4b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	Ωſ	Wire (Black)	Wire Wrap - Black / White	40	None Detected	0	Cellulose (50%) Non-Fibrous (50%)	100	
34596-4b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	ar	Wire (Black)	Wire Insulation - White	09	Chrysotile	70	Synthetic	30	
34596-5b Layer 1	WH Fire Detection Console Panel	Jan-24-2018	ar	Wire (Dark Grey)	Wire Wrap - Dark Grey	8	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-5b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	Ωſ	Wire (Dark Grey)	Wire Insulation - Black	09	None Detected	0	Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

The report shall not be reproduced except in full without written approval of NWest. The report must not be used by the customer to claim product certification, approval, or endorsement by AIHA, EPA, NWest or its employees.

PROGRAMS PAT PROGRAMS
AINA PROFICIENCY ANALTICAL TESTING PROGRAMS LAB# 202314

1/2

Sample No	Location	Date Analysed	Analyst	Description	Phase	8	Asbestos	*	% Other Materials	8	Comments
34596-6b -ayer 1	WH Fire Detection Console Panel	Jan-24-2018	OC	Wire (Dark Grey)	Wire Wrap - Red 40 None Detected	8	None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-6b Layer 2	WH Fire Detection Console Panel	Jan-24-2018	ď	Wire (Dark Grey)	Wire Insulation - Black	09	60 None Detected	0	0 Non-Fibrous	100	
34596-7b Layer 1	Stbd Bridge Wing Console	Jan-24-2018	Сť	Wire (White)	Wire Wrap - White		40 None Detected	0	Cellulose (90%) Non-Fibrous (10%)	100	
34596-7b -ayer 2	Stbd Bridge Wing Console	Jan-24-2018	Qſ	Wire (White)	Wire Insulation - Black	09	60 None Detected	0	0 Non-Fibrous	100	

Bulk asbestos analysis was conducted using calibrated visual estimation in conjunction with polarized light microscopy as detailed in EPA method 600/R-93/116. Sample(s) not destroyed in the testing will be kept for 30 days before disposal.

The samples analyzed in this bulk report are client-submitted, and are not associated with an assessment conducted in accordance with WorkSafeBC regulatory requirements outlined in section 20.112 – Hazardous Materials. Note that EPA 600-R93-116 is not an acceptable method for quantifying asbestos concentrations that are lower than 0.5%. In order to quantify these low concentrations, point-count analysis or transmission electron microscopy (TEM) coupled with gravimetric reduction is recommended.

The report shall not be reproduced except in full without written approval of NWest. The report must not be used by the customer to claim product certification, approval, or endorsement by AIHA, EPA, NWest or its employees.



LAB# 202314

2/2



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett Laundry Room Insp and Clearances

Date: January 30, 2018

Project number: 34659 Client Job or PO#: NEED

				_
Volume Density Concen. v/vv LOQ Comment (L) (flb/mm2) (flb/mL)				
8	٧	٧		
w/v	3	3		
Concen. (fib/mL)	2.55 <0.01 W <	<0.01 W	<0.01	<0.01
Density (fib/mm2)		6.37	00.00	00'0
Volume (L)	2781	2781	0	0
	100	100	100	100
Time Time # # # On Off (Mins) Fibres Fields	2.0	5.0	0.0	0.0
Time (Mins)	180	180	0	0 00:00 00:00 0
Time Off	11:35	11:35	00:00	00:00
Time On	15.45 08:35 11:35 180	15.45 08:35 11:35 180	00:00 00:00	00:00
Avg. Flow Rate (Ipm)	15.45	15.45	0	0
Type* Analyst Avg. Flow Rate (Ipm)	JD	Ωſ	Ωſ	Ωſ
Туре*	AC	AC	ည	ებ
Area	(AC1) Sink	34659-2a Jan-30-2018 Jan-30-2018 (AC2) Entrance	34659-3a Jan-30-2018 Jan-30-2018 (QC) Process Blank	34659-4a Jan-30-2018 Jan-30-2018 (QC) Batch Blank
Date Analysed	Jan-30-2018	Jan-30-2018	Jan-30-2018	Jan-30-2018
Date Collected	34659-1a Jan-30-2018 Jan-30-2018 (AC1) Sink	Jan-30-2018	Jan-30-2018	Jan-30-2018
Sample No	34659-1a	34659-2a	34659-3a	34659-4a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this



1/2

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance; collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

PROGRAMS AIMA PROFICIENCY ANALYTICAL TESTING PROGRAMS Z As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

LAB# 202314

2/2



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust

Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6435039 **Client No.:**34659-1b

Client: NOR765

Location: Laundry Behind Washer

Area (cm2): 100

Density (s/mm²): 61.5

Concentration (s/cm²): 14800

Asbestos Type(s): Chrysotile Amosite

Lab No.:6435040 Client No.:34659-2b Location: (QC) Process Blank

Area (cm²): Blank Density (s/mm²): <7.69 Concentration (s/cm²): NA Asbestos Type(s): None Detected

Lab No.:6435041 **Client No.:**34659-3b

Location: (QC) Batch Blank

Area (cm²): Blank Density (s/mm²): <7.69 Concentration (s/cm²): NA
Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature:

Analyst:

Dated: 1/31/2018 2:54:39

Approved By:

Jak Cha

Frank E. Ehrenfeld, III Laboratory Director



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 1/31/2018 2:54:39



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: 1/31/2018

201 - 415 Gorge Road East

Report No.: 556407 - TEM Dust Wipe

Victoria BC V8T 2W1

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.





CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

BC V8T 2W1

Victoria

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust

Wipe

Project: CCGS Bartlett Laundry Room Insp And

Filter Type: MCE

Clearances

34659 Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Area Sampled (cm²):100

Location: Laundry Behind Washer

Filter Size (mm²): 962 Pore Size (µm): 0.45

Structure Density (s/mm²):7.69

Structure Concentration (s/cm²): 1850

Non-Asbestos Structures: 1 **Asbestos Structures:** 8

Structures < 5 Microns: 7 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 61.5

Structure Concentration (s/cm²): 14800

Asbestos Type(s):

Amosite

Non-Asbestos Type(s): SiAl - Other Fiber

Chrysotile

Micrograph Number: EDXA Spectrum ID: 12:42:33PM

Lab No.: 6435040 Client No.: 34659-2b

Client: NOR765

Lab No.: 6435039

Client No.: 34659-1b

Volume Filtered (mL):2

Dilution Factor (mL):50 **Grid Openings: 10**

Sensitivity (s/mm²):7.69

Opening Area (mm²):0.013

Area Analyzed (mm²):0.130

Detection Limit (s/cm²):1850

Volume Filtered (mL):7 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2):Blank Location: (QC) Process Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²): NA

Non-Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature:

Analyst:

Dated: 1/31/2018 2:54:39

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust

Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

Project No.: 34659

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435041 Area Sampled (cm2): Blank Client No.: 34659-3b Location: (QC) Batch Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²): NA

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Client: NOR765

Volume Filtered (mL):7

Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013

Area Analyzed (mm²):0.130

Detection Limit (s/cm²):NA

Sensitivity (s/mm²):7.69

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature:

Analyst:

Dated: 1/31/2018 2:54:39

Approved By:

Page 2 of 3

Frank E. Ehrenfeld, III

Laboratory Director



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556407 - TEM Dust Wipe

Project: CCGS Bartlett Laundry Room Insp And

Clearances

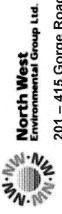
Project No.: 34659

Prepared for: Canadian Coast Guard Services

CCGS BARTLETT

Risk Assessment and Safe Work Procedures: 2018 Dust Cleanup: Various Compartments **Limited Hazardous Materials**

Issue date: February 2, 2018 Project: 34699 RA1 V1.0



201 - 415 Gorge Road East

Victoria, BC

V8T 2W1

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February 2, 2018

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	ಠ	Ţ,	፷	Void Space Under Wheelhouse	MCR Console	MCR Stores	Additional Requirements	0	Ö	<
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Contents		~	1.2	6.	4	5.	1.6			Appendix A. Analytical Reports
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Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

February 2, 2018

1 Background and Scope of Work

(LHMA) in accordance with WorkSafeBC regulatory requirements outlined in the BC Occupational Health and Safety (OHS) Regulation Section 20.112 – Hazardous North West Environmental Group Ltd. (NWest) was retained by the Canadian Coast Guard (CCG, the Client) to conduct a limited hazardous materials assessment Materials. The LHMA was conducted by NWest representative Jen Taptuna on January 26, 2018.

Room in all accessible areas, excluding behind the washers and dryers due to inaccessibility at the time. As assessment of the dust in these two areas identified the Various areas were found to have asbestos-containing cables. The presence of these cables triggered an assessment of latent dust in Wheelhouse console casings. Concurrently, damage to an asbestos-containing bulkhead panel was identified by CCG crew in the Laundry Room. An abatement contractor cleaned the Laundry presence of asbestos fibres in excess of expected ambient levels based on "experience standards" presented by the International Asbestos Testing Laboratories

The scope of work was provided as follows in the request for quote with additional details provided to the attending technician at the time of this assessment.

efforts behind the washers and dryers. Asbestos in latent dust in the Wheelhouse consoles fell in the high range (>100,000 s/cm²). It is suspected that the asbestos is Asbestos in latent dust in the Laundry room fell in the moderate range (>10,000 to 100,000 structures per square centimetre (s/cm²), warranting additional cleaning a result of pulling asbestos-containing cabling throughout the years. Note that there is no accepted, standardized method of determining the mobility of asbestos fibres from latent dust into the air. The rate of mobility is dependent on various factors. The main factor for mobility on the vessel is vibration and movement during normal at-sea operations, therefore, it has been deemed prudent to remove all loosely adhered and safe to access dust from these areas.

Bulk sampling was undertaken of stored gasket materials in the Machinery Control Room Stores (MCR Stores). Chrysotile asbestos was identified in rope gasket/packing materials. These materials have been stored exposed in the MCR Stores for an unknown length of time. The following document presents a risk assessment and provides safe work procedures for removing asbestos-containing dust from the following locations:

- 1. Wheelhouse and consoles
- 2. Laundry Room, specifically behind the washers and dryers.
- Void space beneath the Wheelhouse.
- MCR console.
- . MCR stores.

Risk assessments and general procedures are based on our understanding of the scope of work and the methods and means intended to be used by the Abatement Contractor. Should the work activity type differ from what is noted herein, a new risk assessment may be required for that activity.



Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETI

February 2, 2018

1.1 Wheelhouse and Consoles

Scope of Work

- Remove loosely adhered dust from all surfaces within all consoles.
- Clean all surfaces in the Wheelhouse.
- Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed. Fragile and sensitive equipment present. Some electrical cabling and equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- . Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at all Wheelhouse entrances. Unprotected workers are not permitted in the work area during these work activities
- Seal any HVAC vents/registers.
- HEPA vacuum and bag curtains and other removable porous materials that will be reused. These items will be laundered prior to reuse.
- 6-mil poly drop sheet around console access to prevent entrainment of dust into the carpet.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within consoles. Damp wipe non-porous surfaces. Do NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum and wipe all surfaces within the Wheelhouse to remove loosely adhered latent dust. Binders/books: only HEPA vacuum the outer surfaces. CAUTION: take care not to change any settings on the control panels.
- HEPA vacuum the carpet using a carpet head attachment.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



1.2 Laundry Room

Scope of Work

- Remove loosely adhered dust from all surfaces behind the washers and dryers.
- Clean all surfaces in the Laundry Room.
- Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Crystalline silica in cementitious materials such as deck screed.

Contractor Requirements

Remove loosely adhered dust from behind washers and dryers and clean all Laundry Room surfaces

- .. Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the Laundry Room entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- A pop-up or small enclosure may be constructed in the Alleyway outside the Laundry Room to create more work space. If used, it must not impede worker access through the Alleyway. Coordinate with CCG crew.
- Dismount the washers and dryers to access the space behind them.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces on the back sides of the units and the bulkhead and deck behind. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- NWest will conduct an inspection at this time, prior to re-installation of the units.
- Upon successful inspection, reinstall units.
- HEPA vacuum exposed surfaces of the Laundry Room (i.e. do not open millwork to clean surfaces inside as these were cleaned previously).
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake a final inspection and air clearance sampling.



Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

February 2, 2018

1.3 Void Space Under Wheelhouse

Scope of Work

- Remove loosely adhered dust from all surfaces.
- Remove all dust and debris from deck.
- Hazards: Asbestos-containing dust. Vitreous fibres from exposed Fibreglass-type insulation. Red primer assumed to contain lead. Enclosed space with a single entrance/exit.

Contractor Requirements

Remove loosely adhered dust from all surfaces.

- Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance to the void space. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- access/egress of the space. The intent is to pull makeup air into all areas of the space, therefore, the extraction duct or NAU should be placed as far Install a certified negative air unit (NAU) to draw air out of the space. Place it in such a manner as it does not impede regular or emergency from the entrance as practicable to avoid short circuiting.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces in the space. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- Work should start from the entrance and move into the space to reduce the amount of contamination that accumulates on worker's coveralls.
- Note: additional effort may be required to remove all dust from high contact surfaces such as the deck (i.e. remove all dust, not just loosely adhered
- Due to the small volume of the work area and anticipated increased concentration of fibres rendered airborne during cleaning activities, workers must utilize powered air purifying respirators (PAPRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake personal breathing zone sampling, final inspection, and air clearance sampling.



Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

February 2, 2018

1.4 MCR Console

Scope of Work

- Remove loosely adhered dust from all surfaces within the console.
- Remove loosely adhered dust from the deck behind the console and from cables running out of the console, up to the first cable tray bracket.
- equipment is original to the vessel and therefore, fragile. These materials must be handled carefully to prevent breakage. Engines or other equipment Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Fragile and sensitive equipment present. Some electrical cabling and may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- Moderate risk cleanup activities
- CCG crew to isolate electrical components prior to cleanup work.
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- 6-mil poly drop sheet around console access.
- Using a certified HEPA vacuum with brush attachment, vacuum all surfaces within and behind console. Damp wipe non-porous surfaces. DO NOT DAMP WIPE CABLES. Note: wire or stiff bristles may penetrate cabling insulation. Horsehair or similar is preferred.
- HEPA vacuum the deck around console openings.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.5 MCR Stores

Scope of Work

- Remove box containing asbestos rope gaskets/packing. Remove any visually similar materials, after confirming with CCG these additional materials can be disposed.
 - Clean the shelving unit and adjacent surfaces within three feet.



Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETI

February 2, 2018

Hazards: Asbestos-containing dust, bulkhead panels, and flooring products. Engines or other equipment may be running, posing a noise hazard.

Contractor Requirements

Remove loosely adhered dust from inside consoles and clean all Wheelhouse surfaces.

- . Moderate risk cleanup activities
- Use barrier tape and asbestos warning signs at the entrance. Unprotected workers are not permitted in the work area during these work activities.
- Seal any HVAC vents/registers.
- Remove identified bulk materials and place in 6 mil poly bags. Dispose as asbestos waste.
- Remove from the shelving unit each piece of equipment or material to be kept. HEPA vacuum all exterior surfaces and place in the MCR.
- When all items are removed from the shelving unit, HEPA vacuum and damp wipe the shelving unit.
- HEPA vacuum and damp wipe all surfaces behind and adjacent to the shelving unit.
- NWest will undertake an inspection for cleanliness at this time.
- Upon successful inspection, items can be replaced.
- HEPA vacuum the deck.
- Workers must utilize air purifying respirators (APRs) equipped with P-100 cartridges, disposable coveralls and hand protection.
- Do not allow waste and dust to accumulate during the work.
- Workers decontaminate with tempered clean and soapy water.
- NWest will undertake final inspection and air clearance sampling.

1.6 Additional Requirements

- If suspect materials are discovered during abatement activities that have not been included in this risk assessment, work must stop and the material assessed by a qualified person.
- Submit Notice of Project complete with site specific work procedures to WorkSafeBC no less than 48 hours prior to commencing work
- All HEPA vacuums and NAUs must be certified (DOP/PAO tested) within 12 months of use. Recommend on-site certification to ensure units are functioning properly after transport.



February 2, 2018

Limited Hazardous Materials Risk Assessment & Safe Work Procedures FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

Provide occupational health and safety program including exposure control plans for asbestos, lead, vitreous fibres, and silica as well as procedures for deenergization and lockout if required.

- Provide all first aid for contractor workers.
- alternative respirator cartridges (e.g. nearby welding, chemical applications, or vehicle exhaust). For the purposes of handling the above identified hazardous Other personal protective equipment (PPE) such as safety eyewear, hard hats, or face protection may be required. Site conditions may necessitate the use of materials, all cartridges must utilize P-100 particulate filters, at minimum.
- No wet wiping, wire brushing, or application of liquids to electrical cabling.
- Contractor shall coordinate schedule around the crew's schedule including fueling events, maintenance, practice drills and any other reasonably foreseeable activity. Contractor is responsible for coordination with Chief Engineer and Chief Steward.
- All air sampling to be conducted by NWest.



Photo Plate



Unit/Location: Wheelhouse
Description: Overview
Comments: Curtains and other porous items
meant for reuse will be HEPA vacuumed, bagged,
and laundered. HEPA vacuum and wipe all
surfaces.



Unit/Location: Wheelhouse console
Description: Overview of typical console
Comments: HEPA vacuum accessible surfaces
i, within consoles to remove loosely adhered dust.
Do not wet/damp wipe cables.



Unit/Location: Laundry Room Description: Overview Comments: Units are framed into place.





Unit/Location: Laundry Room Description: Dust behind washers and dryers to be cleaned.

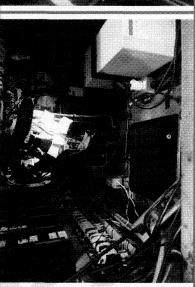
Comments: Remove units and clean backsides of units and the bulkhead and deck.



Unit/Location: Void Space Under Wheelhouse Description: Overview Comments: HEPA vacuum and wipe to remove loosely adhered dust.



Unit/Location: Void Space Under Wheelhouse Description: Overview Comments: HEPA vacuum and wipe to remove loosely adhered dust. Fibreglass-type insulation present.



Unit/Location: MCR
Description: Overview
Comments: HEPA vacuum accessible surfaces
within consoles to remove loosely adhered dust.
Do not wet/damp wipe cables.



Unit/Location: MCR Stores
Description: Asbestos-containing rope
gaskets/packing stored exposed.
Comments: Dispose of ACM, clean shelving and adjacent surfaces within 2 feet.



Comments: HEPA vacuum accessible surfaces within consoles to remove loosely adhered dust.

Description: Overview

Unit/Location: MCR

Do not wet/damp wipe cables.

Limited Hazardous Materials Risk Assessment & Safe Work Procedures partments FOR REVIEW 2018 Dust Cleanup: Various Compartments CCGS BARTLETT

February 2, 2018

Validation

occupational hygiene professionals operating in this jurisdiction. No assessment was requested or made of other potential areas of asbestos or lead contamination All work undertaken was conducted according to standardized methods and otherwise in accordance with protocols and procedures currently utilized by that may or may not be present within the vessel.

Project Manager Report author

Signature on file

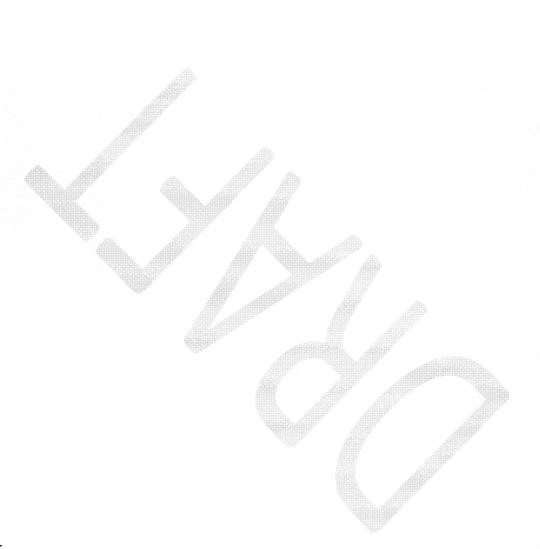
Senior Project Manager Qualified Person as per OHS Reg 6.1 Report review



Limited Hazardous Materials Risk Assessment & Safe Work Procedures partments FOR REVIEW CCGS BARTLETT
2018 Dust Cleanup: Various Compartments

February 2, 2018

Appendix A. Analytical Reports





11 34699 RA1 V0.C - CCGS Bartlett Dust Abatement



Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca 201 - 415 Gorge Road East Victoria, BC V8T 2W1

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Bulk Sample Report

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 01, 2018

Project number: 34694

Client Job or PO#: NEED

Comments 8 2 2 Other Materials Synthetic (50%)
Non-Fibrous (20%)
Cellulose (30%)
Synthetic (10%)
Non-Fibrous (30%) 30 8 % Asbestos Chrysotile Chrysotile 100 100 Phase White / Black White / Grey Rope Gasket (~1.5cm) Wiring - Black, ~1cm Description Analyst 9 88 Feb-01-2018 Feb-01-2018 Date Analysed Location Engine Room MCR Stores Sample No 34694-1b 34694-2b



PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust Rev #5, 1/31/2018

Project:

CCGS Bartlett Wheelhouse Console Asbestos

Testing

Project No.: 34651 Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6435034 Client No.: 34651-6b Location: WH Fire Panel Console FWD

Area (cm²): 100

Density (s/mm²): 1260

Concentration (s/cm²): 6040000

Asbestos Type(s): Chrysotile Amosite Anthophyllite

Lab No.:6435035 Client No.: 34651-7b Location: WH Fire Panel Console AFT

Area (cm²): 100

Density (s/mm²): 1040

Concentration (s/cm²): 9990000

Asbestos Type(s): Chrysotile Amosite

Lab No.: 6435036 Client No.: 34651-8b Location: WH FWD Stbd Console

Area (cm²): 100

Density (s/mm²): 76.9

Concentration (s/cm²): 370000 Asbestos Type(s): Chrysotile

Lab No.: 6435037 Client No.: 34651-9b

Location: WH Batch Blank

Area (cm²): Blank

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Density (s/mm²): <7.69

Lab No.: 6435038 Client No.: 34651-10b Location: WH Process Blank Area (cm2): Blank

Density (s/mm²): 7.69

Concentration (s/cm²): NA Asbestos Type(s): Amosite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature:

Analyst:

Dated: 1/31/2018 5:48:16

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report No.:

556406 - TEM Dust Wipe

Project: CCGS Bartlett Wheelhouse Console

Asbestos Testing

1/31/2018

Project No.: 34651

Report Date:

Client: NOR765

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and it our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40

Dated: 1/31/2018 5:48:16



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd. Report Date:

1/31/2018

201 - 415 Gorge Road East Victoria BC V8T 2W1 Report No.:

556406 - TEM Dust Wipe

Project:

CCGS Bartlett Wheelhouse Console

Asbestos Testing

Project No.: 34651

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7) Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria

BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust Rev #5, 1/31/2018

Wipe

CCGS Bartlett Wheelhouse Console Asbestos

Testing

Project No.: 34651

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6435034

Asbestos Structures: 49

Structures < 5 Microns: 44

Structure Density (s/mm²): 1260

Structure Concentration (s/cm²): 6040000

Asbestos Type(s):

Amosite

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6435035 Client No.: 34651-7b

Client: NOR765

Client No.: 34651-6b

Volume Filtered (mL):0.1

Opening Area (mm²):0.013

Area Analyzed (mm²): 0.0390

Detection Limit (s/cm²): 123000

Dilution Factor (mL):50 Grid Openings:3

Sensitivity (s/mm²):25.6

Volume Filtered (mL):0.05 Dilution Factor (mL):50

Grid Openings:2

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0260 Sensitivity (s/mm²):38.5

Detection Limit (s/cm²):370000

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: WH Fire Panel Console FWD

Structures ≥ 5 µm: 5

Chrysotile

Anthophyllite

Area Sampled (cm²):100 Location: WH Fire Panel Console AFT

Asbestos Structures: 27

Structures < 5 Microns: 22 Structures $\geq 5 \mu m$: 5

Structure Density (s/mm²): 1040

Structure Concentration (s/cm²): 9990000

Asbestos Type(s):

Chrysotile Amosite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<25.6

Structure Concentration (s/cm²):<123000

Non-Asbestos Type(s):

None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<38.5

Structure Concentration (s/cm²): <370000

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature: Analyst:

Dated: 1/31/2018 5:48:16

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

BC V8T 2W1 Victoria

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust Rev #5, 1/31/2018

Wipe

CCGS Bartlett Wheelhouse Console Asbestos Project:

Testing

Project No.: 34651

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435036

Client No.: 34651-8b

Client: NOR765

Volume Filtered (mL):0.1 Dilution Factor (mL):50 **Grid Openings:4**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):92500

Area Sampled (cm²): 100 Location: WH FWD Stbd Console

Asbestos Structures: 4

Structures < 5 Microns: 2 Structures $\geq 5 \mu m$: 2

Structure Density (s/mm²): 76.9

Structure Concentration (s/cm²): 370000

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²): <92500

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6435037 Client No.: 34651-9b

Volume Filtered (mL):7 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²): NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2):Blank Location: WH Batch Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²): NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018 01/31/2018

Date Analyzed:

Signature: Analyst:

Dated: 1/31/2018 5:48:16

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust Rev #5, 1/31/2018

Wipe

Project: CCGS Bartlett Wheelhouse Console Asbestos

Testing

Project No.: 34651

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6435038 Client No.: 34651-10b

Client: NOR765

Volume Filtered (mL):7 Dilution Factor (mL):50 Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):Blank Location: WH Process Blank

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): NA Asbestos Type(s):

Amosite

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

1/31/2018

Date Analyzed:

01/31/2018

Signature:

Analyst:

Dated: 1/31/2018 5:48:16

Approved By:

Page 3 of 4

Frank E. Ehrenfeld, III

Laboratory Director



CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 1/31/2018

Report No.: 556406 - TEM Dust Wipe

Project: CCGS Bartlett Wheelhouse Console

Asbestos Testing

Project No.: 34651

Ayres, Bob

From:

Ayres, Bob

Sent:

Thursday, June 21, 2018 6:36 AM

To:

'Krawciw, Don (HC/SC)'

Subject:

FW: Bartlett Background Testing Update Feb 3

Attachments:

34694 AA2 V1.0 2018-02-02 - CCGS Bartlett Background Testing.pdf

Hello Don,

Last night I received more of the air sampling results. I will forward several emails with attachments and related discussions that should provide more context for yourself and the hygienists.

Regarding the potential meeting today, I checked again with Fleet and they would very much prefer this week as some crew have continued to express concerns and next week there is scheduled asbestos training for many of the crew so they may not be available. Regarding the Friday option, if today does not work Russell advised he could be back at base by 1330 so that would be an option after all. Please advise when you can and we'll let Fleet know – they are looking forward to the chance to ask questions.

Regarding our safety bulletin I understand the reluctance your people would have based on limited information. An option for us may be to revise the wording so we are not stating a HC assessment of risk, but rather our assessment based on evidence so far. We feel it important to get the bulletin out sooner rather than later.

Best regards,

Bob

From: Chaikin, Gabriel

Sent: Wednesday, June 20, 2018 8:32 PM **To:** Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>

Subject: FW: Bartlett Background Testing Update Feb 3

Bob,

This is the initial air testing conducted alongside on February 3rd of this year.

Regards,

Gabe

From: CCGS-NGCC, Bartlett Chief Engineer [BartlettCE@ccgs-ngcc.gc.ca]

Sent: February 3, 2018 5:05 PM **To:** McMillan, Cody; Chaikin, Gabriel

Subject: FW: Bartlett Background Testing Update Feb 3

Hi Cody/Gabe,

Good initial results on the air quality and indication that the asbestos fibres are not airborne.

I have spoken with regarding the extra sampling work over the weekend requiring a separate proposal and we will be paying on a separate bill. We will finalize it early next week.

Regards

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Matt Jackson
Chief Engineer
CCGS Bartlett
Cell:
BartlettCE@ccgs-ngcc.gc.ca

From:

Sent: February-03-18 1:50 PM

To: CCGS-NGCC, Bartlett Chief Engineer **Cc:** Grant Rogers; Joel Shandro; Kyle Ostman **Subject:** Bartlett Background Testing Update Feb 3

Hi Matt, following is an update to our proposal for background testing on the Bartlett.

Preliminary air samples (NIOSH Method 7400 for Asbestos and other Fibers by PCM) were collected in 10 locations throughout the vessel on February 2, 2018 while the vessel was docked alongside, occupied and with systems (e.g. heating and ventilation) operational. All air sample results were reported to be less than 0.01 fibers/ml (see attached air sample report). WorkSafeBC has determined the exposure limit for asbestos fibres to be 0.1 fib/ml for an 8 hour day, however, as personnel are on the ship for 24 hours, this is adjusted to 1/10th of that amount, or 0.01 fib/ml (BCOHS 5.50 Extended work periods).

While initial results are encouraging (in that all were reported to be <0.01 fib/ml), the limit of quantitation (LOQ) of the method is not satisfied until enough fiber loading is achieved (100-1300 fib/mm2). In other words, additional ambient air sampling with sampling times of approximately 10 hours at 2.5 LPM is recommended, although if the atmosphere is sufficiently low in fibers-this fiber loading may still be unachievable. However, due to the potential concern and questions likely to raised by affected parties-we recommend that we take longer ambient samples to be prudent. We are undertaking this follow up testing today (Feb 3).

The ambient air sampling will result in additional costs as we had not included overtime rates in our original proposal. We will honour the lower air sample analysis cost of for additional samples required due to site conditions. I estimate today's sampling will add approximately \$3450 to the original proposal of \$7712 with an estimated total of \$11,162, excluding GST.

Results from Feb 2 Air Testing

All fibre concentrations for samples collected on Feb 2 were below the limit of detection (0.01 fib/ml). Lab report attached.

Other Updates

Wipe samples collected Feb 2 will be delivered to the courier today for Monday arrival at the laboratory. We anticipate results by end of day Tuesday. I had was told there was weekend pickup, but it looks like that was incorrect. I will keep you appraised of any changes.

Please let me know if you have any questions.

Best,



Project Manager North West Environmental Group Ltd.

Document divulgué en vertu de la Loi sur l'accès à l'information.

P. 250-384-9695 ext. F. 250-384-9865 201 - 415 Gorge Road East, Victoria BC , V8T 2W1

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Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett: Background Testing

Date: February 02, 2018
Client Job or PO#: NEED

Project number: 34694

Sample No	Date Collected	Date Analysed	Area	туре*	Analyst	Avg. Flow (pm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	w/v	80	Comment
34694-3a	Feb-02-2018	Feb-02-2018	Feb-02-2018 (AMB) Control Room	AMB	д	2.04	12:05	14:12	127	0.5	100	259.08	0.64	<0.01	≥	v	
94-49	Feb-02-2018	Feb-02-2018	34694-4a Feb-02-2018 Feb-02-2018 Alley Aff	AMB	Q.	5.12	11:33	14:46	193	4.0	100	988.16	5.10	<0.01	≥	v	
94-5a	Feb-02-2018	Feb-02-2018	34694-5a Feb-02-2018 Feb-02-2018 Alley FWD	AMB	QC	5.12	11:42	14:47	185	3.0	100	947.2	3.82	<0.01	>	v	
94-6a	Feb-02-2018	Feb-02-2018	34694-6a Feb-02-2018 Feb-02-2018 Oilers Aft Cabin	AMB	QC	2.04	11:22	14:01	159	2.0	100	324.36	2.55	<0.01	≥	v	
94-7a	Feb-02-2018	Feb-02-2018	34694-7a Feb-02-2018 Feb-02-2018 Winchman's Cabin	AMB	ar	2.61	11:19	13:58	159	3.0	100	414.99	3.82	<0.01	≯	v	
94-8a	Feb-02-2018	Feb-02-2018	34694-8a Feb-02-2018 Feb-02-2018 Alley Alley	AMB	Ωſ	5.1	11:07	16:44	337	2.5	100	1718.7	3.18	<0.01	3	v	
94-9a	Feb-02-2018	Feb-02-2018	34694-9a Feb-02-2018 Feb-02-2018 Logistic Officer's Cabin	AMB	OC.	2.5	10:59	13:56	177	3.5	100	442.5	4.46	<0.01	≯	٧	
4-10a	Feb-02-2018	Feb-02-2018	34694-10a Feb-02-2018 Feb-02-2018 Lounge	AMB	Ωſ	2.8	10:55	13:47	172	3.5	100	481.6	4.46	<0.01	>	v	
4-11a	Feb-02-2018	3469411a Feb-02-2018 Feb-02-2018	(AMB) Boat Deck Alley	AMB	QC	5.12	11:54	16:58	304	1.5	100	1556.48	1.91	<0.01	≥	v	
4-12a	Feb-02-2018	Feb-02-2018	34694-12a Feb-02-2018 Feb-02-2018 (AMB) Boot Deck	AMB	Ð	2.36	11:47	14:19	152	5.5	100	358.72	7.01	<0.01	>	v	·

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



1/2

LAB# 202314

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33/5		>
Concen. (fib/mL)	<0.01	<0.01
Density Concen. v/vv LOQ Comment (fib/mm2) (fib/mL)	00.00	8.28
Volume (L) (f)	0	2006.88
# Fields	100	100
# Fibres	0.0	6.5
Time (Mins)	0	148
<u></u> Ĕ	00:00 00:00	16:55
Ĕδ	00:00	14:27 16:55
Avg. Pate W.	0	13.56
Type* Analyst	JD	JC Or
ž Ž	ည	AC
Area	34694-13a Feb-02-2018 Feb-02-2018 (QC) Field Blank	34694-23a Feb-02-2018 Feb-02-2018 Lounge
Date Analysed	Feb-02-2018	Feb-02-2018
Date Collected	Feb-02-2018	Feb-02-2018
Sample No	34694-13a	34694-23a

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml. (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

PROGRAMS AINA PROFICIENCY ANALYTICAL TESTING PROGRAMS Z As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

LAB# 202314

McNish, Joanne

From:

McNish, Joanne

Sent:

Thursday, June 21, 2018 1:36 PM

To:

Ayres, Bob; Jersch, Russell; 'Krawciw, Don (HC/SC)'

Cc:

Ormiston, Glenn

Subject:

Re: Draft Regional Safety Bulletin - Asbestos, Lead Paint

Bob,

This version is very comprehensive and covers all areas that have been brought to my attention. Thanks to all who provided input.

There is one missed word on last page: work is not to be commenced until an

Glenn,

Please reach out personally to Burt, Guild (Trevor) and Barry Tchir should be included, from Regional perspective.

Bob, Thank you for leading this. Joanne

Sent by BB

From: Ayres, Bob

Sent: Thursday, June 21, 2018 12:57 PM

To: McNish, Joanne; Jersch, Russell; 'Krawciw, Don (HC/SC)'

Cc: Ormiston, Glenn

Subject: Draft Regional Safety Bulletin - Asbestos, Lead Paint

FYI,

I spoke with Dr. Krawciw this morning and given the delay in word from the hygienists in Ottawa we agreed that I would revise the wording in the bulletin.

I have thus revised the wording in the bulletin, in particular the first two full paragraphs on page 2. Have included additional detail as to the sampling undertaken in 1st paragraph and changed wording to indicate that the work to date and review with HC and consultants has provided CCG with confidence that risk is low. We also state that this work and monitoring will continue on an ongoing basis.

DFO OHS has confirmed that they will be the receiver of any entries into the exposure registry (as WorksafeBC mails a copy to the employer).

I shared the draft with the AC's office yesterday, as it is to go out noted as approved by – should be no trouble with the revision.

I advised Dena in HQ that I'd send a copy for their information once it goes out. Dena also mentioned would be good to share with union.

If you have a chance to review and comment please do. Russell I'll touch base with you and if you agree we can look to have the AC's office send to all by end of day?

Thanks all, Bob

s.16(2) s.19(1)

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

June-21-18 6:19 PM

To:

CCGS-NGCC, Bartlett Logistics Officer

Subject:

FW: Bartlett - Results

Attachments:

COA_566181.pdf; 35254 AA14 V1.0 2018-06-21 - CCGS Bartlett S#1-62.pdf

Dearest Cam.

Captain asked me to send you most recent asbestos reports. File 35254 is air samples from 31 May thru to 21 June inclusive. The COA file is results of wipe samples taken 18 Jun 2018.

Respectfully,

Scott Ware, Relief Chief Engineer, CCGS Bartlett, Red Cell: or

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: June-21-18 3:24 PM

To: Chaikin Gabriel; Jeremy Robinson; CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject: Bartlett - Results

Good afternoon, please find attached:

- 1. Wipe samples from the Wheelhouse all within expected ambient range OR below the limit of detection.
- 2. Air clearance results for the Stack below threshold. NOTE: we've updated samples 51-54 to include the compartment name.

Please let me know if you have any questions.

Best,

Project Manager

North West Environmental Group Ltd.



#201 – 415 Gorge Road East Victoria, B.C. V8T 2W1

C:

O: (250) 384-9695 ext.

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6536374 Client No.: 35254-83b Location: Wheelhouse-Fwd Port Window Sill

Area (cm²): 100

Density (s/mm²): <19.2

Concentration (s/em²): <925

Asbestos Type(s): None Detected

Lab No.:6536375 Client No.: 35254-84b Location: Wheelhouse-Mid Stbd Top Of

Console Area (cm²): 100

Concentration (s/cm²): 925 Asbestos Type(s): Chrysotile

Density (s/mm²): 19.2

Lab No.:6536376 Client No.: 35254-85b Location: Wheelhouse-Mid Stbd Inside Console Concentration (s/cm²): <925

Area (cm²): 100

Density (s/mm²): <15.4

Asbestos Type(s): None Detected

Lab No.:6536377 Client No.: 35254-86b Location: Wheelhouse-Fwd Stbd Inside Console Concentration (s/cm²): 1850

Area (cm²): 100 Density (s/mm²): 19.2 Asbestos Type(s): Chrysotile

Lab No.:6536378 Client No.: 35254-87b

Location: Field Blank Area (cm²): Blank

Density (s/mm²): <15.4

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature: Analyst:

Dated: 6/19/2018 11:01:40

Approved By:

Frank E. Ehrenfeld, III Laboratory Director





9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/19/2018 11:01:40



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

7402.

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged. (11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536374 Client No.: 35254-83b

Volume Filtered (mL): 10 Dilution Factor (mL): 50

Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):925

Area Sampled (cm²):100

Location: Wheelhouse-Fwd Port Window Sill

Ashestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤19.2 Structure Concentration (s/cm²): ≤925

Asbestos Type(s):
None Detected

Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Ashestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):
None Detected

Micrograph Number:

EDXA Spectrum ID: Lab No.:6536375

Client No.: 35254-84b

Volume Filtered (mL): 10 Dilution Factor (mL): 50 Grid Openings: 4 Opening Area (mm²): 0.013

Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 925

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Wheelhouse-Mid Stbd Top Of Console Filter Size (mm²):962

Asbestos Structures: 1

Structures < 5 Microns: 1
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²): 19.2
Structure Concentration (s/cm²): 925

Asbestos Type(s): Chrysotile Filter Type: MCE
Filter Size (mm²): 96

Filter Size (mm²):962 Pore Size (μm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature: Analyst:

Approved By:

The Energy

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/19/2018 11:01:41

Page 1 of 4

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Location: Wheelhouse-Mid Stbd Inside Console

Lab No.:6536376

Client No.: 35254-85b

Volume Filtered (mL):8 Dilution Factor (mL):50

Grid Openings: 5 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0650 Sensitivity (s/mm²): 15.4

Detection Limit (s/cm²):925

Asbestos Type(s):

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤15.4

Area Sampled (cm²): 100

Structure Concentration (s/cm²): <925

Ashestes Structures: None Detected

None Detected

Filter Type:MCE

Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Ashestos Structures: None Detected

Structure Density (s/mm²):<15.4 Structure Concentration (s/cm²):<925

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6536377 Client No.: 35254-86b

Volume Filtered (mL):5 Dilution Factor (mL):50

Grid Openings: 8 Opening Area (mm²): 0.013 Area Analyzed (mm²):0.104 Sensitivity (s/mm²):9.62 Detection Limit (s/cm²):925

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Wheelhouse-Fwd Stbd Inside Console

Asbestos Structures: 2

Structures < 5 Microns: 1 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 19.2 Structure Concentration (s/cm²): 1850

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Ashestos Structures: 1

Structure Density (s/mm²): 9.62 Structure Concentration (s/cm²):925

Non-Asbestos Type(s): SiAl - Other Fiber

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature: Analyst:

Dated: 6/19/2018 11:01:41

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Total West Environmental Group Ed

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.:

566181 - TEM Dust

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6536378 Client No.: 35254-87b

Volume Filtered (mL):50 Dilution Factor (mL):50 Grid Openings:5

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0650 Sensitivity (s/mm²): 15.4 Detection Limit (s/cm²): NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): Blank Location: Field Blank

Ashestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤15.4 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Ashestes Structures: None Detected

Structure Density (s/mm²):<15.4 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/18/2018

Date Analyzed:

06/19/2018

Signature:

Analyst:

Dated: 6/19/2018 11:01:41

Approved By:

Fre Enough

Frank E. Ehrenfeld, III Laboratory Director



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/19/2018

Report No.: 566181 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

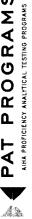
Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018

Client Job or PO#: F1782-180965 Project number: 35254

Comment	Overloaded with Welding Dust	Overloaded with Welding Dust						Overloaded with Welding Dust		
LOQ	N/A	V/A	>	>	٧	v	>	N/A	٧	
v/w	N/A	¥	>	^	^	^	*	N/A	*	
Concen. (fib/mL)	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	N/A	N/A	2.55	7,01	5.73	8.92	5.10	N/A	3.18	0.00
Volume (L)	1098.62	1082.32	1950	1953.25	1956.96	1982.08	949	130	818.26	0
# Fields	100	100	100	100	100	100	100	100	001	100
# Fibres	Ю	ъ	2.0	2.5	4.5	7.0	4.0	OL.	2.5	0.0
Time (Mins)	337	332	009	109	604	809	767	40	721	0
Time Off	13:33	13:34	18:07	18:12	18:20	18:29	18:36	14:31	18:42	00:00
Time On	95:20	08:05	08:07	08:11	08:16	08:21	13:44	13:51	14:31	00:00
Avg. Flow Rate (lpm)	3.26	3.26	3.25	3.25	3.24	3'56	3.25	3.25	3.26	0
Analyst	BR	88	BR	BR	BR	BR	BR	BR	BR	BR
Туре*	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	AMB	χ.
Area	(AMB) MCR 1	(AMB) AMS 1	May-31-2018 Jun-01-2018 (AMB) Aft Oilers	May-31-2018 Jun-01-2018 (AMB) Lounge	(AMB) Bridge	(AMB) Gym	(AMB) MCR 2	(AMB) AMS 2	(AMB) AMS 3	3525410a May-31-2018 Jun-01-2018 (QC) Field Blank
Date Analysed	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018
Date Collected	35254-1a May-31-2018 Jun-01-2018 (AMB) MCR 1	35254-2a May-31-2018 Jun-01-2018 (AMB) AMS 1	May-31-2018	May-31-2018	35254-5a May-31-2018 Jun-01-2018 (AMB) Bridge	May-31-2018 Jun-01-2018 (AMB) Gym	35254-7a May-31-2018 Jun-01-2018 (AMB) MCR 2	35254-8a May-31-2018 Jun-01-2018 (AMB) AMS 2	35254-9a May-31-2018 Jun-01-2018 (AMB) AMS 3	May-31-2018
Sample No	35254-1a	35254-2a	35254-3a	35254-4a	35254-5a	3525 4-6 a	35254-7a	35254-8a	35254-9a	35254-10a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



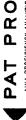
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LAB# 202314

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Comment	Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										/ Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
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v/v	}	>		>		>	>	>		>	3		₹		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	0000	8.92	7.64	12.10	3.18	9.55	5.10	0000	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	0'9	9.5	5.5	7.5	4.0	0'0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time Off	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2.61	0	2:92	0	2.92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Analyst	JD	Дſ	ac	BR	BR	BR	BR	BR	BR	ac	Οſ	Of	ОĆ	Ωſ	αc	g
Type*	သ	AMB	သ	AMB	သ	AMB	AC	AC	20	AMB	2200	ებ	AMB	ъð	AMB	ΨC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance		(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational (AMS)	(QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018		Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	35254-11a Jun-05-2018 Jun-06-2018	35254-12a Jun-05-2018	35254-13a Jun-05-2018	35254-14a Jun-06-2018	35254-15a Jun-06-2018	35254-16a Jun-06-2018	35254-17a Jun-06-2018	35254-18a Jun-06-2018	35254-19a Jun-06-2018	35254-20a Jun-07-2018 Jun-08-2018	35254-21a Jun-07-2018 Jun-08-2018	35254-22a Jun-07-2018	35254-23a Jun-08-2018	35254-24a Jun-08-2018	35254-25a Jun-09-2018	35254-26a Jun-09-2018
Sample No	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS

LAB# 202314

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Concen. (flb/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22.93	22.29	00:00	00.00	8.28	00:00	21.66	13.38	0.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512.95	2497.72	0	0	545.49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
#ields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	509	0	153	153	0	149	143	32	78
Time Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
Time On	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (Ipm)	2.1	2:35	15.46	15.23	15.46	15.23	15.23	15.23	0	0	2.61	0	16	16	0	15.25	15.25	2.6	2.6
Analyst	JD.	e e	g	Ωſ	ac	OC	JD	JD	OC	ac	JD	QC	OC	ЭD	Oſ	ar	ac	ac	Qſ
Type*	АМВ	AMB	AC	AC	AC	AC	AC	AC	¢c	σc	AMB	QC	AC	AC	QC	AC	AC	220	330
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	35254-36a Jun-10-2018 Jun-11-2018 (QC) Field Blank	(AMB) Alley Adj. Lounge	(QC) Field Blank	Jun-12-2018 (AC) Air Clearance	Jun-12-2018 (AC) Air Clearance	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	(OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018		Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Date Collected	Jun-10-2018	35254-28a Jun-10-2018 Jun-11-2018	Jun-10-2018	35254-30a Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	35254-34a Jun-10-2018	35254-35a Jun-10-2018	Jun-10-2018	35254-37a Jun-12-2018	35254-38a Jun-12-2018	35254-39a Jun-12-2018	35254-40a Jun-12-2018	Jun-12-2018	35254-42a Jun-15-2018	35254-43a Jun-15-2018	3525 4 44a Jun-15-2018	Jun-15-2018
Sample	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	3525 4 44 a	35254-45a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

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LAB# 202314

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na/a	3		>	₹		>	>	>	>			3		3	₹		
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (flb/mm2)	1.91	0.00	7.01	5.10	1.27	13.38	7.01	27.39	22.93	1.27	3.18	0.00	0000	0.64	1.27	1.27	0.00
Volume (L)	458.4	0	2168	2168	0	2354.48	2354.48	2354,48	2354.48	0	0	869.75	0	2555.12	2648.6	0	0
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Elbres	1.5	0.0	5.5	4.0	1.0	10.5	5.5	21.5	18.0	1.0	2.5	0.0	0.0	0.5	1.0	1.0	0.0
Time (Mins)	191	0	271	271	0	152	152	152	152	0	0	355	0	164	170	0	0
<u>₽</u> 0	13:56	00:00	15:34	15:34	00:00	11:28	11:28	11:41	11:41	00:00	00:00	14:51	00:00	12:57	12:59	00:00	00:00
۽ و	10:45	00:00	11:03	11:03	00:00	95:80	98:56	60:60	60:60	00:00	00:00	95:80	00:00	10:13	10:09	00:00	00:00
Avg. Flow Rate (ipm)	2.4	0	8	8	0	15.49	15.49	15.49	15.49	0	0	2.45	0	15.58	15.58	0	0
Analyst	JD	QC	JD.	JD	JD	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	æ
Туре*	AMB	ф	AC	AC	¢	AC	AC	AC	AC	фc	φ	AMB	χ,	AC	AC	¢	သ
Area	(AMB) MER Below Stack	(QC) Field Blank	35254-48a Jun-16-2018 Jun-17-2018 (AC) Wheelhouse	35254-49a Jun-16-2018 Jun-17-2018 (AC) Wheelhouse	35254-50a Jun-16-2018 Jun-17-2018 (QC) Field Blank	35254-51a Jun-17-2018 Jun-18-2018 (AC) Cargo Hold 1	35254-52a Jun-17-2018 Jun-18-2018 (AC) Cargo Hold 1	35254-53a Jun-17-2018 Jun-18-2018 (AC) Winch Room 1	35254-54a Jun-17-2018 Jun-18-2018 (AC) Winch Room 2	(QC) Field Blank 1	(QC) Field Blank 2	(AMB) Mer Below Stack	Jun-19-2018 (QC) Field Blank	(AC) Stack	(AC) Stack	35254-61a Jun-21-2018 Jun-21-2018 (QC) Field Blank	(QC) Field Blank
Date Analysed	3525 4 46a Jun-16-2018 Jun-17-2018	35254-47a Jun-16-2018 Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	35254-55a Jun-17-2018 Jun-18-2018	Jun-18-2018	35254-57a Jun-19-2018 Jun-19-2018	Jun-19-2018	Jun-21-2018 (AC) Stack	35254-60a Jun-21-2018 Jun-21-2018 (AC) Stack	Jun-21-2018	35254-62a Jun-21-2018 Jun-21-2018
Date Collected	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	35254-56a Jun-17-2018	Jun-19-2018	35254-58a Jun-19-2018	35254-59a Jun-21-2018	Jun-21-2018	Jun-21-2018	Jun-21-2018
Sample No	3525 4 4 6a	35254-47a	35254-48a	35254-49a	35254-50a	35254-51a	35254-52a	35254-53a	35254-54a	35254-55a	35254-56a	35254-57a	35254-58a	35254-59a	35254-60a	35254-61a	35254-62a

PAT PROGRAMS AIHA PROFICIENCY ANALYTICAL TESTING PROGRAMS As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.

LAB# 202314

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*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per mi

OCC - occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant, Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded; This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)

Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.

Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

5 V As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

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LAB# 202314



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Date: June 21, 2018 **Client Job or PO#:** F1782-180965

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Туре*	Analyst	Avg. Flow Rate (Ipm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)		v/vv	rođ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	АМВ	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	АМВ	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	8	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	<	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	>	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3.26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	V	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	8	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	АМВ	BR	3.25	13:51	14:31	40	OL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	8	<	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	< 0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Туре*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/ vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	осс	ΟĽ	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	w	<	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	סנ	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	<	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	AMB	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	٧	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	٧	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	٧	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270.1	12.10	<0.01	V	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	JD	2.4	09:23	16:04	401	7.5	100	962.4	9.55	<0.01	٧	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	occ	JD	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	w	<	Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
35254-22a	Jun-07-2018	Jun-08-2018	(QC) Field Blankl	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	סנ	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	w	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	סנ	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	D	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	٧	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	D	14.41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	٧	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (Ipm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	D	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	w	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	AMB	JD	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	w	<	
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	w	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	w	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	JD	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	٧	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	OL	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	٧	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	٧	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	>	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	σt	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	D	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	AMB	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	٧	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	٧	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	D	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	٧	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD OIL	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	~	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	8	<	
35254-44a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	occ	JD D	2.6	14:40	15:12	32	9.5	100	83.2	12.10	0.056	٧	<	Steve / Top Level / PAPR
35254-45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	occ	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	8	<	Dennis / 4th Level / PAPR

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LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Туре*	Analyst	Avg. Flow Rate (Ipm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	rođ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	АМВ	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	w	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
3525 4-4 8a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	٧	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	w	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	٧	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	٧	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	٧	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	ν	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	8	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	w	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2 64 8.6	1.27	<0.01	V	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

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LAB# 202314

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi

AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314



Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Date: June 21, 2018

Contractor: Canadian Coast Guard - Victoria

Client Job or PO#: F1782-180965

Project: CCGS Bartlett - General Hazmat Consulting

Project number: 35254

Sample No	Location	Date	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
		Analysed									
35254-99b	Boson Stores - Beneath Perforated Metal Panels	Jun-21-2018	JD	Deckhead/Bulkhead Insulation	Pink	100	None Detected	0	Glass	100	
	Boson Stores - Beneath Perforated Metal Panels	Jun-21-2018	JD	Deckhead/Bulkhead Insulation	Yellow	100	None Detected	0	Glass	100	
35254-101b	Boson Stores - Beneath Perforated Metal Panels		ΟC	Deckhead/Bulkhead Insulation	Pink	100	None Detected	0	Glass	100	



Ayres, Bob

From:

Jacquard, Mary on behalf of Girouard, Roger

Sent:

Friday, June 22, 2018 7:53 AM

To:

XPAC CCG All

Subject:

Regional Safety Bulletin

Attachments:

Western Region Safety Bulletin - Asbestos and Lead Paint June 21.pdf

On behalf of the A/AC Kevin Carrigan and the AC Roger Girouard, please find attached a Regional Safety Bulletin that speaks to the issue of Hazardous Materials, Asbestos and Lead Paint in our workplaces.

Recent findings on the CCGS Bartlett have resulted in increased awareness for both Fleet and Shore-Based employees as to the presence of asbestos containing materials and lead paint in older ships and structures.

The purpose of this bulletin is to inform employees of the potential of these hazardous materials in many of our workplaces, identify the risks and mitigation measures, provide information, identify appropriate controls and to outline options for documentation of potential exposure.

If any questions as to the issues raised in this bulletin please feel free to speak with your supervisor or to contact Coast Guard Safety and Security, as per the bulletin.

Pages 1371 to / à 1374 are duplicates of sont des duplicatas des pages 1548 to / à 1551

Document divulgué en vertu de la Loi sur l'accès à l'information.

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Logistics Officer

Sent:

June-22-18 3:26 PM

To:

CCGS-NGCC, Bartlett Captain

Subject:

FW: Laundry of curtains on bartlett

Capt.

Update

CAM DEAN

Supply Officer CCGS Bartlett 25 Huron Street Victoria, BC V8V 4V9 Shoreline 250-480-2691 or 2692 Cell –

From: Canadian HAZ-MAT Environmental Ltd [mailto:info@haz-mat.ca]

Sent: June-22-18 12:58 PM

To: CCGS-NGCC, Bartlett Logistics Officer **Subject:** Re: Laundry of curtains on bartlett

Update FYI: I spoke with last Vancouver Island Linen, they are equipped and experienced at handling asbestos contaminated laundry. They just need to receive it in sealed bags, with hooks removed (they use moderate risk procedures to handle it. It would need to be HEPA vacuumed first as per regs

Certified® Asbestos Building Inspector (AHERA)

Canadian HAZ-MAT Environmental 250 891 8611 info@haz-mat.ca 1111 Tulip Ave Victoria, BC V8Z7Z2 www.haz-mat.ca



On Fri, Jun 22, 2018 at 12:19 PM, CCGS-NGCC, Bartlett Logistics Officer < <u>BartlettLO@ccgs-ngcc.gc.ca</u>> wrote:

Hi Dave,

		Document Released Under the Access to s.19 (1) formation Act / Document divulgué en ve s.20(1)(b): Loi sur l'accès à l'information. s.20(1)(c)
	Average cost forbags Laundry (Linens) is between \$400 to	
	Our supplier for this service is <i>Vancouver Island Linen</i> .	
	Regards.	
	CAM DEAN	
	Supply Officer	
	CCGS Bartlett	
	25 Huron Street	
	Victoria, BC V8V 4V9	
	Shoreline 250-480-2691 or 2692	
_	Cell –	
	From: Canadian HAZ-MAT Environmental Ltd [mailto:info@haz-mat Sent: June-22-18 11:58 AM To: CCGS-NGCC, Bartlett Logistics Officer Subject: Fwd: Laundry of curtains on bartlett	<u>ca]</u>
	Hello Cam,	
	I didn't see your email address on this list, so i am forwarding	message.
	Questions,	
	Can you remind me what the usual cost is for laundry of non as do you usually use.	bestos containing materials, also which supplier

I hope to have a solution roughly in place by later today, or atleast be able to provide pricing.

Certified® Asbestos Building Inspector (AHERA)

Canadian HAZ-MAT Environmental

250 891 8611

info@haz-mat.ca

1111 Tulip Ave

Victoria, BC

V8Z7Z2

www.haz-mat.ca



----- Forwarded message -----

From:

Date: Fri, Jun 22, 2018 at 8:12 AM

Subject: RE: Laundry of curtains on bartlett

To: Canadian HAZ-MAT Environmental Ltd <info@haz-mat.ca>

Cc: "Chaikin, Gabriel

 $(\underline{Gabriel.Chaikin@dfo-mpo.gc.ca})" < \underline{Gabriel.Chaikin@dfo-mpo.gc.ca} >, "CCGS-NGCC, Bartlett Chief"$

Engineer" < BartlettCE@ccgs-ngcc.gc.ca>

Hi following are the relevant Regs and Guidelines. 12.158 addresses "adequate facility". If you were looking to do the laundry yourself, you'd need a SWP, which we can review on behalf of the CCG.

Volumes:

- 1. Curtains: 27 3'x6' door curtains and 27 3'x3' window curtains.
- 2. Linens (no clothing): 12 bags w/ approx. weight of 25-30 lbs each.

Personal Protective Clothing and Equipment

G6.31 Contaminated personal protective clothing - Information to laundry workers

Issued August 1, 1999

Section 6.31 of the OHS Regulation states:

The employer must ensure that workers who launder clothing contaminated with asbestos are informed of the hazards of asbestos and the precautions required for handling the clothing.

Under section 5.82(1)(b) of the OHS Regulation, the employer is responsible for laundering protective clothing contaminated with asbestos (see OHS Guideline G5.82). However, before protective clothing contaminated with asbestos can be sent to an acceptable laundry facility, the employer must, under section 6.30(5) of the OHS Regulation, ensure that it is cleaned with a vacuum cleaner, equipped with a HEPA-filtered exhaust, and placed in a water-soluble plastic bag. This plastic bag must be sealed and labelled. A commercial laundry or linen service would be considered an "acceptable" laundry facility if they are capable of handling contaminated laundry.

The requirements of sections 12.157 and 12.158 of the OHS Regulation also apply.

Section 5.82(1)(b) requires the employer to "launder or dispose of the protective clothing on a regular basis, according to the hazard." Note that the provisions of section 12.157 of the *Regulation* also apply. That is, the employer must advise the operator of the laundry or dry cleaning facility in writing of any potential hazards.

12.157 Supplier responsibility

When articles are sent for processing to a laundry or dry cleaning facility, the employer sending the articles must advise the operator of the facility, in writing, of

- (a) the identity of any materials contained with the articles which could pose a hazard to workers handling the articles,
- (b) the nature of any hazard that may arise from the materials, and
- (c) general precautionary measures to be followed when handling the materials.

12.158 Operator responsibility

If articles to be processed may contain materials such as hazardous biological or chemical contaminants, sharp objects, or other materials which would pose a hazard to workers handling the articles, the operator of a laundry or dry cleaning establishment must

- (a) determine the nature of any hazard to workers,
- (b) develop effective written safe work procedures to minimize the risk of injury and disease, and
- (c) ensure that workers are adequately instructed and directed to follow the safe work procedures.



Project Manager

North West Environmental Group Ltd.

J. |

From: Canadian HAZ-MAT Environmental Ltd < info@haz-mat.ca>

Sent: June 19, 2018 10:36 AM

To:

Subject: Laundry of curtains on bartlett

Hi

I had a call from Cam on the bartlet about cleaning curtains. I wanted to check with you on volume of material as well as contamination level and determine suitable solution.

Can you call sometime

Certified® Asbestos Building Inspector (AHERA)

Canadian HAZ-MAT Environmental 250 891 8611 info@haz-mat.ca 1111 Tulip Ave Victoria, BC V8Z7Z2 www.haz-mat.ca

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: Jen Taptuna <jtaptuna@nwest.bc.ca>

Sent: June 22, 2018 12:52 PM

To: Canadian HAZ-MAT Environmental Ltd

Cc: Chaikin Gabriel; CCGS-NGCC, Bartlett Chief Engineer;

CCGS-NGCC, Bartlett Logistics Officer

Subject: RE: Laundry of curtains on bartlett

Not a problem. I believe CCG or the ship is hiring you directly. Any financial discussion should be directed to them. Best,



Jen Taptuna Project Manager North West Environmental Group Ltd. C. 250-580-1473 (Primary)

From: Canadian HAZ-MAT Environmental Ltd <info@haz-mat.ca>

Sent: June 22, 2018 12:40 PM

To:

Cc: Chaikin, Gabriel (Gabriel.Chaikin@dfo-mpo.gc.ca) <Gabriel.Chaikin@dfo-mpo.gc.ca>; CCGS-NGCC, Bartlett Chief Engineer <BartlettCE@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Logistics Officer <BartlettLO@ccgs-ngcc.gc.ca>

Subject: Re: Laundry of curtains on bartlett

Thank you that really helps us provide some scope for this work. I have provided a draft estimate below for review.

We can provide 2 technicians to HEPA vacuum the materials (estimate day day . Creating safe work procedures . We would basically facilitate this work for you with an existing laundry so their charges would be additional to these costs (I should have an estimate shortly but these should not be too much different than normal). Please add an additional for admin, communication with laundry, project management. These prices do not include GST.

Please don't hesitate to let me know if you have any questions or require any further information.

Sincerely, Dave

Certified® Asbestos Building Inspector (AHERA)

Canadian HAZ-MAT Environmental 250 891 8611 info@haz-mat.ca 1111 Tulip Ave Victoria, BC V8Z7Z2 www.haz-mat.ca



On Fri, Jun 22, 2018 at 8:12 AM,

wrote:

Hi Dave, following are the relevant Regs and Guidelines. 12.158 addresses "adequate facility". If you were looking to do the laundry yourself, you'd need a SWP, which we can review on behalf of the CCG.

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G6.31 Contaminated personal protective clothing - Information to laundry workers

Issued August 1, 1999

Section 6.31 of the OHS Regulation states:

The employer must ensure that workers who launder clothing contaminated with asbestos are informed of the hazards of asbestos and the precautions required for handling the clothing.

Under section <u>5.82(1)(b)</u> of the *OHS Regulation*, the employer is responsible for laundering protective clothing contaminated with asbestos (see OHS Guideline <u>G5.82</u>). However, before protective clothing contaminated with asbestos can be sent to an acceptable laundry facility, the employer must, under section <u>6.30(5)</u> of the *OHS Regulation*, ensure that it is cleaned with a vacuum cleaner, equipped with a HEPA-filtered exhaust, and placed in a water-soluble plastic bag. This plastic bag must be sealed and labelled. A commercial laundry or linen service would be considered an "acceptable" laundry facility if they are capable of handling contaminated laundry.

The requirements of sections 12.157 and 12.158 of the OHS Regulation also apply.

Section 5.82(1)(b) requires the employer to "launder or dispose of the protective clothing on a regular basis, according to the hazard." Note that the provisions of section 12.157 of the *Regulation* also apply. That is, the employer must advise the operator of the laundry or dry cleaning facility in writing of any potential hazards.

12.157 Supplier responsibility

When articles are sent for processing to a laundry or dry cleaning facility, the employer sending the articles must advise the operator of the facility, in writing, of

- (a) the identity of any materials contained with the articles which could pose a hazard to workers handling the articles,
- (b) the nature of any hazard that may arise from the materials, and
- (c) general precautionary measures to be followed when handling the materials.

12.158 Operator responsibility

If articles to be processed may contain materials such as hazardous biological or chemical contaminants, sharp objects, or other materials which would pose a hazard to workers handling the articles, the operator of a laundry or dry cleaning establishment must

- (a) determine the nature of any hazard to workers,
- (b) develop effective written safe work procedures to minimize the risk of injury and disease, and
- (c) ensure that workers are adequately instructed and directed to follow the safe work procedures.



Project Manager

North West Environmental Group Ltd.

C.

From: Canadian HAZ-MAT Environmental Ltd < info@haz-mat.ca>

Sent: June 19, 2018 10:36 AM

To:

Subject: Laundry of curtains on bartlett

Hi

I had a call from Cam on the bartlet about cleaning curtains. I wanted to check with you on volume of material as well as contamination level and determine suitable solution.

Can you call sometime

Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Certified® Asbestos Building Inspector (AHERA)

Canadian HAZ-MAT Environmental 250 891 8611 info@haz-mat.ca 1111 Tulip Ave Victoria, BC V8Z7Z2 www.haz-mat.ca

Main Ops Officer / Agent principal des Ops (DFO/MPO)

From:

CCGS-NGCC, Bartlett Wheelhouse

Sent:

June-25-18 10:11 AM

To:

CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC,

Bartlett Chief Engineer; CCGS-NGCC, Bartlett Engine Room

Subject:

FW: Canadian Coast Guard to Acquire Three Interim Icebreakers and various updates

From: Main Ops Officer / Agent principal des Ops (DFO/MPO) [mailto:Western.Ops-Centre2@dfo-mpo.gc.ca]

Sent: June-24-18 5:53 PM

To: CCGS-NGCC, Bartlett Wheelhouse; CCGS-NGCC, CaptainGoddard WheelHouse; CCGS-NGCC Eckaloo Wheelhouse; CCGS-NGCC Eckaloo Captain; CCGS-NGCC, GordonReid Wheelhouse; CCGS-NGCC, JohnPTully Wheelhouse; CCGS-NGCC, MCharles WheelHouse; CCGS-NGCC, Neocaligus Wheelhouse; CCGS-NGCC, OtterBay Wheelhouse; CCGS Sir Wilfrid Laurier; CCGS Tanu; CCGS Vector; Dumit CO; CCGS-NGCC Eckaloo Chief Engineer; Taylor Denis; XPAC CCG All Stations; IRB509/ESC509 (DFO/MPO); IRB501; IRB507/ESC507 (DFO/MPO); IRB508/ESC508 (DFO/MPO); Webb Nathan; Wiseman Kara

Subject: Canadian Coast Guard to Acquire Three Interim Icebreakers and various updates

Commanding Officers,

Please review the following with crews, and raise any questions back to the appropriate person. Our intention is to have a conference call this month and next. Questions can also be raised then.

Yesterday, Public Services and Procurement Canada announced the following (see below).

Having interim additional icebreaking capacity will allow the Coast Guard to support the VLE programs currently underway, refits and a longer Arctic season while vessels are being replaced under the National Shipbuilding strategy. It will also allow the Coast Guard to consider other interim measures for priorities across the country.

At Victoria Shipyard, work continues on the Sir John Franklin, the replacement vessel for the WE Ricker. This was the first vessel that has been built under the National Shipbuilding Strategy. Although the delivery to Coast Guard has needed to be adjusted to later in 2018 than originally planned, we are working at finalizing crew lists, and will start crewing the vessel with core crew over the summer (Chief Engineer, Electrician, mate) and slowly add other positions throughout the fall, placing the full crew when the vessel begins its operationalization.

I would like to thank Chief Matt Jackson, Maintenance Manager Gabe Chaikin, Captain McCullagh, Chief Ross McKenzie, Captain Reid, Captain Shuckburgh, Bartlett officers, Bosuns and crew red and white, S&S Manager Bob Ayres, Marine Superintendent Russell Jersch and staff, Captain Ormiston and Captain Bennett, ME, Health Canada, and others involved for the tremendous effort of the awareness, planning, clean-up and mitigation efforts with respect to Asbestos management onboard Bartlett. An information package is being finalized to be widely distributed, and will also include information for those no longer sailing onboard. I have included some information from the bulletin.

'Asbestos refers to six naturally occurring fibrous minerals. Its desirable properties include that it greatly increases the tensile strength of materials, and is an excellent insulator against noise, heat and fire. These properties supported its use for many years in a number of different commercial and industrial settings, as well as in a wide range of consumer products. As long as asbestos is tightly bound within materials or encapsulated, it poses no significant health risk. If disturbed and reduced to a friable state such that it becomes airborne and is inhaled it may pose long-term health risks.

The CCG continues to take significant efforts at asbestos management, including regular surveys of our ships and remediation or encapsulation of ACM where appropriate. In the recent case on the CCGS Bartlett, a comprehensive regime of sampling has been undertaken to provide a broader analysis of risk. This has included bulk material samples of wiring and other potential sources, dust wipe samples throughout suspect areas and air sampling throughout the ship at various times. Samples of suspect materials confirmed the presence of asbestos in certain specific wiring and in dusts in a variety of locations. It is probable, that in some cases at least, these dusts were residual from previous remediation efforts when cleaning standards were less rigorous than today. An asbestos remediation contractor is now conducting a thorough cleaning of suspect areas and finalizing a plan to encapsulate material in the ship's stack. Importantly, air monitoring on the ship in a variety of locations, times including prior to the recent cleaning efforts, and operational states have all resulted in results either below the limit of detection or below the limit of quantitation for asbestos. Samples from the ventilation ducts also showed negative for asbestos.'

The John P Tully has just completed its VLE and successfully completed the PAPA trip. A number of people worked tirelessly to support the VLE and make that possible. A VLE starts years out, with plans, costing, detail work, and then project oversight and management, onboard work, drawing updates, SMS updates, operationalizing, and familiarization.

I would like to take an opportunity to thank the Tully Chief Engineers, Roger Horton and Ryan Braidwood for the tireless work leading up to, during and post VLE, including readying all systems for program. Jean-Luc Arsenault and Louise-Anne Granger for their efforts in developing, planning, supporting and securing funding. The Commanding Officers, Victor Gronmyr and Mike Corfield for work throughout the project and operationalizing the vessel for sea.

The tradespeople, supervisors, and management at Allied Shipbuilders Limited, under the leadership of Chuck Ko.

Gord Fawcett for bringing his experience and practicality to planning and execution. Techsol engineers for the switchboard and overseeing the integration. Maintenance managers Ed Wright and Carissa Tetrault and engineering support from Erica, Colin, Scott, and Ian.

The on sight project teams who spent months living out of a suitcase, oversight and crawling into awkward spaces. Ryan, Dave, Ryan, Ryan, (not à typo - there were 3). Roger, Andrew, Brent, Robin, Tarpan, and Christian. Notable thanks to Ryan Braidwood and David Veldman for the final push to get systems running through trials and ready for program. Gerald for keeping all connected while in the yard.

Tully White cycle for doing all the destoring and dealing with the trials and restoring of the ship.

And, of course, on behalf of the team, Tim Hortons on the Dollarton Hywy.

The Sir Wilfrid Laurier will move into VLE this fall winter, after their return from the Arctic. As indicated in the FOP, the VLE will be split into two time frames, to ensure the Western Arctic program has minimum impacts. Thanks to the CE's, ME teams and COs for the work leading here, and the CO's, CE's, crews, clients and shore management teams for working the additional challenges of a split VLE.

My thanks to all who work the many drydock and refits where time nor money are never enough, and making it work.

The Emergency Support Vessels have had the request for proposals reviewed, and evaluated, and we expect an announcement soon. These 2 crewed vessels will be leased, and will also have small CG teams onboard, scaled to meet CG operational and program requirements.

Work continues on the pay situation. More resources have been put in place, and better linkages into the pay Centre. There was some restructuring to align all of the resources associated with pay to one stream, which was done last month. Thus has seen some confusion as protocols and requirements were shifted. Please ensure practices are shifted to align with the most current information sent.

More information will follow.

Joanne RD Fleet

SOURCE Public Services and Procurement Canada

Helping Keep Canada's Waters Safe

GATINEAU, QC, June 22, 2018 /CNW/ - The Government of Canada is committed to providing the women and men of the Canadian Coast Guard with the equipment they need to keep Canadian waters safe, while supporting economic growth.

On behalf of the Canadian Coast Guard, Public Services and Procurement Canada has issued an Advanced Contract Award Notice (ACAN) to Chantier Davie of Lévis,Quebec, for the acquisition and conversion of three medium commercial icebreakers. This ensures a fair, competitive process allowing any supplier with a comparable option to also submit a proposal before a contract is awarded.

The ACAN confirms Canada's intention to enter into a contract with Chantier Davie. Other interested suppliers have 15 calendar days to signal their interest in bidding for this contract, by submitting a "statement of capabilities" that meets the requirements laid out in the ACAN.

These ships would provide interim capability for the Canadian Coast Guard, while replacement vessels are being built under the National Shipbuilding Strategy. Icebreakers are essential to ensuring that Canadian ports remain open duringCanada's ice seasons, ensuring goods such as fresh produce and fuel are delivered safely.

Quotes

"Our Government is committed to supporting the Coast Guard in carrying out its crucial work on behalf of all Canadians. We are one step closer to acquiring supplementary

capacity that will support interim icebreaking capability in time for the upcoming icebreaking season. "

The Honourable Carla Qualtrough Minister of Public Services and Procurement

"The Canadian Coast Guard has unique requirements given Canada's wide range of challenging ice conditions in both our southern waters and the Arctic. We are making sure they have the equipment and tools they need to keep Canadian waters safe and commercial routes open during Canada's ice seasons."

The Honourable Lawrence MacAulay Minister of Agriculture

Quick facts

- This acquisition will consist of purchasing a class of three existing Anchor Handling Tug Supply icebreakers.
- These ships will be used to backfill for Canadian Coast Guard vessels while they are undergoing maintenance, refit and vessel life extension.
- These ships will conduct critical icebreaking duties for the Southern wintertime program and are to be deployed as needed in support of Arctic summertime programs.
- The first ship will be put to immediate use for icebreaking during the upcoming 2018-2019 season.

http://www.cbc.ca/news/politics/coast-guard-icebreakers-davie-1.4718592 Sent by BB

Original Message

From: Gascon, Julie <Julie.Gascon@dfo-mpo.gc.ca>

Sent: Friday, June 22, 2018 4:11 PM

To: Ivany, Gary; Alvaro, Tanya; Moss, Derek; LeBlanc, Michèle (NCR); Veber, Denise; Organ, Jason; McNish, Joanne;

Llewellyn, Don

Subject: Fw: Canadian Coast Guard to Acquire Three Interim Icebreakers

Julie Gascon

From: Mackenzie, Joey < Joey. Mackenzie@dfo-mpo.gc.ca>

Sent: Friday, June 22, 2018 3:35 PM

To: Pelletier, Mario; Smith, Andy; Haubert, Marie-Christine; Sanderson, Marc; Gascon, Julie; Wight, Robert; Ryan, Sam Cc: Hutchinson, Jeffery; Marier, Marie-Michele; Lebel, Mathieu; Girouard, Roger; Vézina, Sylvain; Spurrell, Wade;

LeBlanc, Brian (Executive Director, CCGC); Hill, Johanna

Subject: Canadian Coast Guard to Acquire Three Interim Icebreakers

Hello,

Following our NCR townhall, employees are likely wondering about the announcement that was alluded to by the Commissioner.

Senior Managers are encouraged to provide verbal updates to employees on today's great news of the acquisition of three ice-breakers for the Canadian Coast Guard.

At the same time, to take the opportunity to acknowledge the great work undertaken by the Major Projects group in achieving this through the MC and TBS process.

https://www.canada.ca/en/public-services-procurement/news/2018/06/canada-to-acquire-three-interimicebreakers.html

Cheers,

Joey

Joey Mackenzie

Chief of Staff, Commissioner's Office Canadian Coast Guard / Government of Canada joey.mackenzie@dfo-mpo.gc.ca / Tel: 613-990-5044

Chef de cabinet, Bureau du commissaire Garde côtière canadienne/ Gouvernement du Canada joey.mackenzie@dfo-mpo.gc.ca / Tel: 613-990-5044

s.16(2)

s.19(1)

CCGS-NGCC, Bartlett Captain

CCGS-NGCC, Bartlett Chief Engineer From:

Sent: June-25-18 4:11 PM

To:

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Cc:

Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer

Subject: RE: Bartlett - Ambient sampling for ER

H. For the record, I thought it best just to document that yes, the Captain has asked that we continue to monitor the air quality on the Engineroom entrance deck as long as we are working accessing DeckHead Cavities for Swipe testing. We realize that it's technically not required, but we'd rather sample too much than too little. It is illogical to us to have high TEM swipe samples on areas that were previously clean and have good air samples, (although there is no correlation to >10,000 s/cm4 and >.1 f/ml.

Regards

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: June-25-18 11:50 AM

To: CCGS-NGCC, Bartlett Chief Engineer; Chaikin Gabriel

Subject: Bartlett - Ambient sampling for ER

Hi Ross, we now have three sets of ambient samples for the ER work. Would you like us to continue with the ambient sampling or are you satisfied with these results and no longer need to continue? (note: ambient air testing is not required by WorkSafe for the type of cleaning work currently being undertaken by QM – ambient samples have been collected at the request of the temporary CE for piece of mind for the crew).

We're happy to continue if you'd like. Just let me know your preference.

Best,

Project Manager

North West Environmental Group Ltd.



#201 - 415 Gorge Road East Victoria, B.C. V8T 2W1

O: (250) 384-9695 ext.

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CCGS-NGCC, Bartlett Captain

From:	
Sent:	June-26-18 5:18 PM
To:	CCGS-NGCC, Bartlett Chief Engineer
Cc:	Chaikin Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett
	Senior Engineer; Brian Salmon; Grant Rogers
Subject:	Re: Bartlett Bulk Reports, DH testing, and confirmation - June 26
	tte. battlett batt ttepotte, bit testing, and committee same as
Hi Ross, that is the plan. Very mention below is related to We will provide results as Best,	
Sent from my Samsung Galaxy	smartphone.
Original message From: "CCGS-NGCC, Bar Date: 2018-06-26 6:01 PM To: Cc:	tlett Chief Engineer" < BartlettCE@ccgs-ngcc.gc.ca>
	SartlettCO@ccgs-ngcc.gc.ca>, "CCGS-NGCC, Bartlett Senior Engineer"
-	
<bartlettse@ccgs-ngcc.gc< td=""><td></td></bartlettse@ccgs-ngcc.gc<>	
Subject: Fw: Bartiett Bulk	Reports, DH testing, and confirmation - June 26
Greetings ,	
that) we are willing to pay fo can obtain the results a weel	Cavity Swipes today, but I neglected to discuss the turn-around time for the results. (I think or expedited report analysis, and that the benefit justifies the cost. I would say that if we k sooner, then that is easily justifiable, (as it could potentially expedite the refit by 1 sest results, it appears that the time between sampling & reporting was 10 days (June 13 s).
I would also suggest that dai sending to USA for analysis.	ly samples get sent off for processing, rather than waiting until they are all collected before
Regards,	
Ross McKenzie	
Chief Engineer, CCGS Bartlet	t
Cell:	
BartlettCE@bar.ccgs-ngcc.gc	ca
BartlettChief@gmail.com for fi	
Bartlettemerægman.com	

From:

Sent: June-25-18 4:21 PM

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To: Chaikin Gabriel; CCGS-NGCC, Bartlett Chief Engineer

Cc:

Subject: RE: Bartlett Bulk Reports, DH testing, and Amb confirmation - June 25

Good afternoon, will be on site to do the DH testing tomorrow morning. The time will be dependent on when his first job of the day finishes. He'll contact Ross when he gets to the vessel. His contact info is below:

Occupational Hygiene Technologist North West Environmental Group Ltd.

#201 – 415 Gorge Road East Victoria, B.C. V8T 2W1

€:

Best,



Project Manager North West Environmental Group Ltd.

From:

Sent: June 25, 2018 2:06 PM

To: Chaikin, Gabriel (Gabriel.Chaikin@dfo-mpo.gc.ca) < Gabriel.Chaikin@dfo-mpo.gc.ca >; 'CCGS-NGCC, Bartlett Chief

Engineer' < BartlettCE@ccgs-ngcc.gc.ca>

Cc:

Subject: Bartlett Bulk Reports, DH testing, and Amb confirmation - June 25

Good afternoon, please find attached:

- 1. Bosun's Stores insulation bulk sample results.
- 2. Stack pipe lagging (exposed when blanket was removed). The sample was negative for asbestos, which makes sense if it was included in the 1990s pipe abatement that occurred in the ER. Note: only one pipe was available to sample at the time. We would need to collect a few more in that space to have a definitive answer. If it's Calsil (powdery) it likely contains crystalline silica, regardless of any asbestos content. There may also be asbestos remnants that were not properly removed during previous abatements concealed beneath newer layers.

As per Gabe's instruction, we will continue with ambient monitoring while cleanup work continues in the ER.

With regard to deckhead wipe sampling:

- 1. We will bring some poly drop sheets to create an enclosure around the tiles and will use a HEPA vacuum to create directional airflow.
- Will someone from the Crew be tasked to help with enclosure set up and tile removal?

Please let me know if you have any questions or concerns.

Best,

Project Manager North West Environmental Group Ltd.



#201 – 415 Gorge Road East Victoria, B.C. V8T 2W1

C:

O: (250) 384-9695 ext.

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Ryan, Sam

From:

Richardson, Dena

Sent:

Wednesday, June 27, 2018 7:15 PM

To:

Pelletier, Mario; Gascon, Julie; Ryan, Sam; Ivany, Gary

Subject:

FW: 18-069 Incident Initial Notification, ROC-Western Region, Change to Fleet

Readiness Profile. Initial

Attachments:

NPHSC One Pager - Bartlett - Abestos.docx

Good evening,

Please see attached a one page synopsis of the Bartlett in anticipation of any questions that may be asked related to the incident notification below. Please note that this document was prepared in advance for tomorrow's National Policy Health and Safety Committee but provides context.

Thank you,

Dena

From: ROC1 / COR1 (DFO/MPO)

Sent: Wednesday, June 27, 2018 6:37 PM

Subject: 18-069 Incident Initial Notification, ROC-Western Region, Change to Fleet Readiness Profile. Initial

18-069 Incident Initial Notification, ROC-Western Region, Change to Fleet Readiness Profile, Initial NOTIFICATION OF SIGNIFICATN EVENT

CANADIAN COAST GUARD-WESTERN REGION- REGIONAL OPERATIONS CENTRE

Description of threat/event:

As of 12:00 PDT, 27/June/2018, CCGS Bartlett will enter unscheduled maintenance period to remediate ACM contamination. The estimated time for return to service is July 27th, 2018.

From July 5th, 2018 to July 27th, 2018 (CCGS Bartlett's estimated RTS date) the Canadian Coast Guard will have reduced capability to lift or place floating aids to navigation on the west coast of Canada.

Anticipated Media Attention:

Low.

Program Reporting:

Fleet.

Current CCG Actions:

Contracted ACM mitigation on board CCGS Bartlett is on-going.

Current Actions (other):

MNS has available tugs on an if/when required basis for working Fraser River.

Initial analysis/impact assessment on CCG:

Reduced capacity to lift or place floating aids to navigation on the west coast of Canada. Further delays and added pressures to complete the MNS Buoy program as per the FOP for the remaining year.

Notification provided to:

Standard Distribution.

Next Steps:

Fleet readiness profile adjusted from Ops Normal (Blue) to Ops restricted (White).

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DISCLAIMER **This Information is preliminary and subject to change. Further, the information given for some occurrences may not have been verified/validated by CCG. Therefore, caution should be used when using this information.

Bartlett - One Pager for NHPSC

The CCG continues to take significant efforts at asbestos management, including regular surveys of our ships and remediation or encapsulation of ACM where appropriate. In the recent case on the CCGS Bartlett, a comprehensive regime of sampling has been undertaken to provide a broader analysis of risk.

This has included bulk material samples of wiring and other potential sources, dust wipe samples throughout suspect areas and air sampling throughout the ship at various times. Samples of suspect materials confirmed the presence of asbestos in certain specific wiring and in dusts in a variety of locations. It is probable, that in some cases at least, these dusts were residual from previous remediation efforts when cleaning standards were less rigorous than today.

An asbestos remediation contractor is now conducting a thorough cleaning of suspect areas and finalizing a plan to encapsulate material in identified areas. Importantly, air monitoring on the ship in a variety of locations, times including prior the recent cleaning efforts, and operational states have all resulted in results either below the limit of detection or below the limit of quantitation for asbestos. Samples from the ventilation ducts also showed negative for asbestos.

Discussions with the Health Canada Occupational Health Medical Officer and environmental consultants are ongoing and these, in conjunction with the results of air monitoring, have provided CCG with confidence that the risk to personnel from asbestos in the current state should be considered to be very low. The greatest risk of asbestos related disease would be from work involving significant prolonged exposure to high concentrations of air-borne asbestos fibers and that is not indicated in our circumstances. That being said the CCG still maintains a cautious approach and will continue to work with specialists and will monitor, including air sampling, on an ongoing basis.

For CCG ships with asbestos the Fleet Safety Manual 7.A.10, Handling and Containing Asbestos Materials provides guidance. Important principles include that these ships will have a designated Asbestos Coordinator, typically the Chief Engineer, and that this position is responsible for monitor and updating the Vessel Specific Asbestos Management Plan (AMP). In addition, 7.A.10 outlines what must be in the AMP and provides a template.

Due the delayed nature of onset of potential ill health effects, many employees have questions regarding options for documentation of potential exposures. Whether an employee chooses to document in this manner is up to their discretion based upon their own understanding of exposure level and risk. All employees in the Western Region and been provided details and contact information for health officials, both provincial and federal with respect to exposure documentation.

Ayres, Bob

From:

Ayres, Bob

Sent:

Wednesday, June 27, 2018 9:08 AM

To:

Krawciw, Don (HC/SC)

Subject:

Re: contact with Health Canada hygienist

Hi Don,

I'll connect with Brian later today. I'm in Quebec with a full day today but time change will give me a chance.

Thanks,

Bob

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Krawciw, Don (HC/SC)

Sent: Wednesday, June 27, 2018 11:58 AM

To: Ayres, Bob

Subject: contact with Health Canada hygienist

It would be good if you could catch Brian this week before you go away in case there are any further issues before the ship sails.

Let me know if you have trouble reaching him.

Don Krawciw, MD, CCFP, Dip Sports Med, CCBOM
Occupational Health Medical Officer, Public Service Occupational Health Program (BC)

Health Canada / Government of Canada

don.krawciw@hc-sc.gc.ca / Tel: 250-363-3566 / Fax: 250-363-3668

Médecin en santé au travail, Programme de santé au travail de la fonction publique (C-B)

Santé Canada / Gouvernement du Canada

don.krawciw@hc-sc.gc.ca / Tél.: 250-363-3566 / Téléc: 250-363-3668

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541814 Client No.: 35254-91b

Volume Filtered (mL):1 Dilution Factor (mL):50 **Grid Openings: 10**

Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²): 3700

Opening Area (mm²):0.013

Area Sampled (cm²):100

Location: Upper D: Laundry Room-HVAC Duct Filter Size (mm²):962

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): <3700

Asbestos Type(s): None Detected

Filter Type: MCE Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6541815 Client No.:35254-92b

Volume Filtered (mL):0.5 Dilution Factor (mL):50 **Grid Openings: 10** Opening Area (mm²):0.013 Area Analyzed (mm²): 0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):7400

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Boat D: Fan Room-HVAC Duct

Asbestos Structures: 2

Structures < 5 Microns: 2 Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 14800

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<7400 Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

Dated: 6/28/2018 6:30:56

06/27/2018

Signature: Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd. 201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date: Report No.:

6/27/2018

566679 - TEM Dust Rev #2, 6/28/2018

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541816 Client No.: 35254-93b

Area Sampled (cm²): 100 Location: Wheelhouse-HVAC Duct Filter Type:MCE

Filter Size (mm²):962

Volume Filtered (mL): 1

Pore Size (µm): 0.45

Dilution Factor (mL):50

Asbestos Structures: 6

Non-Asbestos Structures: None Detected

Grid Openings:4 Opening Area (mm²):0.013 Structures < 5 Microns: 5 Structures ≥ 5 µm: 1

Structure Density (s/mm²):<19.2

Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²):19.2

Structure Density (s/mm²): 115 Structure Concentration (s/cm²): 55500 Structure Concentration (s/cm²):<9250

Detection Limit (s/cm²):9250

Asbestos Type(s):

Non-Asbestos Type(s): None Detected

Micrograph Number:

Chrysotile

EDXA Spectrum ID:

Amosite

Lab No.:6541817 Client No.: 35254-94b

Area Sampled (cm²):100

Filter Type: MCE Filter Size (mm²):962

Volume Filtered (mL):0.5

Location: Poop D: Alley Adjacent Galley-Main Recirc Duct

Structure Concentration (s/cm²): 29600

Pore Size (µm): 0.45

Dilution Factor (mL):50

Asbestos Structures: 4

Non-Asbestos Structures: None Detected

Grid Openings: 10 Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69

Structures < 5 Microns: 3 Structures ≥ 5 µm: 1 Structure Density (s/mm²): 30.8

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<7400 Non-Asbestos Type(s):

Detection Limit (s/cm²):7400

Asbestos Type(s): Chrysotile

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

Dated: 6/28/2018 6:30:56

06/27/2018

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Signature: Analyst:

Page 2 of 8

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

6/27/2018 Report Date:

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541818

Client No.: 35254-95b

Client: NOR765

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²):3700

Area Sampled (cm2): 100

Location: Upper D: Cabin U-38 Supplemental

Heating Duct

Asbestos Structures: 1

Structures < 5 Microns: 1

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541819 Client No.: 35254-96b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130

Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):1850

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2):100

Location: Upper D: 3rd Officer-Supplemental

Heating Duct

Asbestos Structures: 2

Structures < 5 Microns: 1 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Amosite Chrysotile Filter Type:MCE Filter Size (mm²):962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²):<1850

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018 06/27/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541820

Client No.: 35254-97b

Volume Filtered (mL): 1 Dilution Factor (mL): 50 Grid Openings: 10

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.130 Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100

Location: Boat D: Chief Officer-Supplemental

Heating Duct

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): <3700

Asbestos Type(s): None Detected Filter Type:MCE

Filter Size (mm²):962 Pore Size (μm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6541821 Client No.:35254-98b

Volume Filtered (mL):50 Dilution Factor (mL):50 Grid Openings:4 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520

Sensitivity (s/mm²): 19.2

Detection Limit (s/cm²): 185

Micrograph Number: EDXA Spectrum ID: Area Sampled (cm²):100 Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <185

Asbestos Type(s): None Detected Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of	uns report for fur	ther information reg	garding your anaiysis.

Date Received: Date Analyzed: 6/25/2018

06/27/2018

Approved By:

Track Thanfill

Frank E. Ehrenfeld, III Laboratory Director

Signature: Analyst:

Dated: 6/28/2018 6:30:56

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

> Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541822

Client No.: 35254-102b

Volume Filtered (mL):50 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²): 185

Area Sampled (cm²): 100

Location: Stack-Stbd Air Supply Plenum

Asbestos Structures: 36

Structures < 5 Microns: 33 Structures \geq 5 μ m: 3

Structure Density (s/mm²): 692 Structure Concentration (s/cm²): 6660

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6541823 Client No.: 35254-103b

Volume Filtered (mL): 15 Dilution Factor (mL):50

Grid Openings:4 Opening Area (mm²):0.013

Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):617

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Stack-Main Engine Water Jacket Tank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <617

Asbestos Type(s): None Detected

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018 06/27/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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Client: North West Environmental Group Ltd.

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Victoria BC V8T 2W1

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

CCGS Bartlett-General Hazmat Consulting Project:

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541824

Client: NOR765

Client No.: 35254-104b

Volume Filtered (mL):20 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520

Sensitivity (s/mm²): 19.2

Detection Limit (s/cm²):463

Area Sampled (cm²): 100

Location: Stack-Exhaust Pipe Support Strut

Asbestos Structures: 15

Structures < 5 Microns: 13

Structures $\geq 5 \mu m$: 2 Structure Density (s/mm²): 288

Structure Concentration (s/cm²): 6940

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²): <463

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541825 Client No.: 35254-105b

Volume Filtered (mL):20 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):116

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):400

Location: Stack-Bulkhead Stiffener

Asbestos Structures: 15

Structures < 5 Microns: 12

Structures \geq 5 μ m: 3 Structure Density (s/mm²): 288

Structure Concentration (s/cm²): 1730 Asbestos Type(s):

Chrysotile Tremolite

Filter Type: MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<116

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018 06/27/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

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Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541826

Client No.: 35254-106b

Volume Filtered (mL): 50 Dilution Factor (mL): 50 Grid Openings: 10

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.130 Sensitivity (s/mm²): 7.69 Detection Limit (s/cm²): NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): Blank Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

That then for

Frank E. Ehrenfeld, III Laboratory Director



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Dated: 6/28/2018 6:30:56

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project: **CCGS Bartlett-General Hazmat Consulting**

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.: 35254-91b Location: Upper D: Laundry Room-HVAC Duct Concentration (s/cm²): <3700 Area (cm²): 100 Asbestos Type(s): None Detected

Density (s/mm²): <7.69

Lab No.:6541815 Client No.: 35254-92b Location: Boat D: Fan Room-HVAC Duct

Area (cm2): 100

Density (s/mm²): 15.4

Concentration (s/cm²): 14800

Asbestos Type(s): Amosite Chrysotile

Lab No.:6541816 Client No.: 35254-93b Location: Wheelhouse-HVAC Duct

Area (cm2): 100

Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile Amosite Density (s/mm²): 115

Lab No.:6541817 Client No.: 35254-94b

Location: Poop D: Alley Adjacent Galley-Main Concentration (s/cm²): 29600

Recirc Duct

Asbestos Type(s): Chrysotile

Area (cm²): 100 Density (s/mm²): 30.8

Lab No.:6541818 Client No.: 35254-95b Location: Upper D: Cabin U-38 Supplemental

Heating Duct

Area (cm2): 100

Density (s/mm²): 7.69

Concentration (s/cm²): 3700 Asbestos Type(s): Chrysotile

Lab No.:6541819 Client No.: 35254-96b Location: Upper D: 3rd Officer-Supplemental

Heating Duct

Area (cm2): 100 Density (s/mm²): 15.4 Concentration (s/cm²): 3700

Asbestos Type(s): Amosite Chrysotile

Lab No.:6541820 Client No.: 35254-97b Location: Boat D: Chief Officer-Supplemental

Heating Duct

Area (cm2): 100 **Density (s/mm²): <7.69** Concentration (s/cm²): <3700 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Signature: Analyst:

Dated: 6/28/2018 6:30:55

Page 1 of 4

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541821 Client No.: 35254-98b Location: Field Blank Area (cm²): 100

Density (s/mm²): <19.2

Concentration (s/cm²): <185 Asbestos Type(s): None Detected

Lab No.:6541822 Client No.:35254-102b Location: Stack-Stbd Air Supply Plenum

Concentration (s/cm²): 6660 Asbestos Type(s): Chrysotile Area (cm²): 100

Density (s/mm²): 692

Lab No.: 6541823 Client No.:35254-103b

Area (cm2): 100

Location: Stack-Main Engine Water Jacket Tank Concentration (s/cm²): <617 Asbestos Type(s): None Detected

Density (s/mm²): <19.2

Lab No.:6541824 Client No.: 35254-104b

Location: Stack-Exhaust Pipe Support Strut

Concentration (s/cm²): 6940 Asbestos Type(s): Chrysotile

Concentration (s/cm²): 1730

Area (cm2): 100 Density (s/mm²): 288

Lab No.:6541825 Client No.: 35254-105b

Lab No.:6541826

Client No.: 35254-106b

Location: Stack-Bulkhead Stiffener

Area (cm²): 400

Asbestos Type(s): Chrysotile Tremolite

Density (s/mm²): 288

Location: Field Blank Concentration (s/cm²): NA Asbestos Type(s): None Detected

Area (cm²): Blank Density (s/mm²): <7.69

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Signature: Analyst:

Dated: 6/28/2018 6:30:55

Page 2 of 4

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/28/2018 6:30:55



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541814 Client No.: 35254-91b

Volume Filtered (mL): 1 Dilution Factor (mL):50 Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²):3700

Area Sampled (cm²):100

Location: Upper D: Laundry Room-HVAC Duct Filter Size (mm²): 962

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): <3700

Asbestos Type(s): None Detected

Filter Type:MCE

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6541815 Client No.: 35254-92b

Volume Filtered (mL): 0.5 Dilution Factor (mL):50 **Grid Openings: 10** Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²): 7400

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Boat D: Fan Room-HVAC Duct

Asbestos Structures: 2

Structures < 5 Microns: 2 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 14800

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<7400

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

s.19(1)

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd. 201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date:

6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541816

Area Sampled (cm²):100

Filter Type: MCE

Client No.: 35254-93b

Location: Wheelhouse-HVAC Duct

Filter Size (mm²):962 Pore Size (µm): 0.45

Volume Filtered (mL): 1 Dilution Factor (mL):50 **Asbestos Structures:** 6

Non-Asbestos Structures: None Detected

Grid Openings:4

Structures < 5 Microns: 5 Structures ≥ 5 µm: 1

Structure Density (s/mm²):<19.2

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520

Structure Density (s/mm²): 115

Structure Concentration (s/cm²):<9250

Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):9250 Structure Concentration (s/cm²): 55500 Asbestos Type(s):

Non-Asbestos Type(s):

Chrysotile

Micrograph Number:

Amosite

None Detected

EDXA Spectrum ID:

Area Sampled (cm²):100

Filter Type: MCE Filter Size (mm²):962

Lab No.:6541817 Client No.: 35254-94b

Location: Poop D: Alley Adjacent Galley-Main

Pore Size (µm):0.45

Volume Filtered (mL):0.5

Recirc Duct **Asbestos Structures: 4**

Non-Asbestos Structures: None Detected

Dilution Factor (mL):50 **Grid Openings: 10** Opening Area (mm²):0.013 Area Analyzed (mm²):0.130

Structures < 5 Microns: 3 Structures $\geq 5 \mu m$: 1 Structure Density (s/mm²): 30.8 Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<7400

Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):7400 Structure Concentration (s/cm²): 29600 Asbestos Type(s):

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Frank E. Ehrenfeld, III

Laboratory Director

Signature:

Analyst:

Page 2 of 8

Approved By:

001410

Dated: 6/28/2018 6:30:56

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

6/27/2018 Report Date:

Report No.: 566679 - TEM Dust Rev #2, 6/28/2018

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541818

Client No.: 35254-95b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings: 10 Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²):3700

Area Sampled (cm²):100

Location: Upper D: Cabin U-38 Supplemental

Heating Duct

Asbestos Structures: 1

Structures < 5 Microns: 1 Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541819 Client No.: 35254-96b

Volume Filtered (mL):2

Dilution Factor (mL):50

Grid Openings: 10 Opening Area (mm²):0.013

Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²):1850

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Upper D: 3rd Officer-Supplemental

Heating Duct

Asbestos Structures: 2

Structures < 5 Microns: 1 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE Filter Size (mm²): 962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<1850

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd. 201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date:

Project:

6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

W

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541820

Client No.: 35254-97b

Volume Filtered (mL): 1 Dilution Factor (mL): 50

Grid Openings:10 Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²):3700

Area Sampled (cm2): 100

Location: Boat D: Chief Officer-Supplemental

Heating Duct

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures \geq 5 μ m: None Detected Structure Density (s/mm²): \leq 7.69 Structure Concentration (s/cm²): \leq 3700

Asbestos Type(s): None Detected Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s): None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6541821 Client No.:35254-98b

Volume Filtered (mL): 50 Dilution Factor (mL): 50 Grid Openings: 4 Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 185

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100 Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤19.2 Structure Concentration (s/cm²): ≤185

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

Dated: 6/28/2018 6:30:56

06/27/2018

Signature:
Analyst:

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541822

Client No.: 35254-102b

Volume Filtered (mL):50 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²): 185

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541823 Client No.: 35254-103b

Volume Filtered (mL):15 Dilution Factor (mL):50

Grid Openings: 4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):617

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Stack-Stbd Air Supply Plenum

Asbestos Structures: 36

Structures < 5 Microns: 33 Structures $\geq 5 \mu m$: 3

Structure Density (s/mm²): 692 Structure Concentration (s/cm²): 6660

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185

Non-Asbestos Type(s):

None Detected

Area Sampled (cm2):100

Location: Stack-Main Engine Water Jacket Tank Filter Size (mm²): 962

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <617

Asbestos Type(s): None Detected

Filter Type: MCE

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018 06/27/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Page 5 of 8

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 5

Project:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541824

Client No.: 35254-104b

Volume Filtered (mL):20 Dilution Factor (mL):50

Grid Openings: 4

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520

Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):463 Area Sampled (cm2):100

Location: Stack-Exhaust Pipe Support Strut

Asbestos Structures: 15

Structures < 5 Microns: 13

Structures ≥ 5 µm: 2 Structure Density (s/mm²): 288 Structure Concentration (s/cm²): 6940

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²):<463

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6541825 Client No.:35254-105b

Volume Filtered (mL): 20 Dilution Factor (mL): 50

Grid Openings: 4

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 116

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):400

Location: Stack-Bulkhead Stiffener

Asbestos Structures: 15

Structures < 5 Microns: 12 Structures $\ge 5 \mu m$: 3

Structure Density (s/mm²): 288
Structure Concentration (s/cm²): 1730

Asbestos Type(s):

Chrysotile Tremolite Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<116

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

Dated: 6/28/2018 6:30:56

06/27/2018

Signature: Analyst:

-

Approved By:

Fre Enample

Frank E. Ehrenfeld, III Laboratory Director

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541826

Client No.: 35254-106b

Volume Filtered (mL):50 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69 Detection Limit (s/cm²): NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): Blank Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Dated: 6/28/2018 6:30:56

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449

Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Density (s/mm²): <7.69

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.: 35254-91b Location: Upper D: Laundry Room-HVAC Duct Concentration (s/cm²): <3700 Area (cm2): 100

Asbestos Type(s): None Detected

Lab No.:6541815 Client No.: 35254-92b

Location: Boat D: Fan Room-HVAC Duct

Concentration (s/cm²): 14800 Asbestos Type(s): Amosite Chrysotile

Area (cm2): 100 Density (s/mm²): 15.4

Lab No.:6541816 Client No.:35254-93b **Location:** Wheelhouse-HVAC Duct

Area (cm²): 100

Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile Amosite Density (s/mm²): 115

Lab No.: 6541817 Client No.: 35254-94b

Location: Poop D: Alley Adjacent Galley-Main Concentration (s/cm²): 29600

Asbestos Type(s): Chrysotile

Area (cm2): 100

Density (s/mm²): 30.8

Lab No.:6541818 Client No.: 35254-95b

Location: Upper D: Cabin U-38 Supplemental

Heating Duct

Heating Duct

Recirc Duct

Area (cm2): 100

Density (s/mm²): 7.69

Concentration (s/cm²): 3700

Asbestos Type(s): Chrysotile

Lab No.:6541819 Client No.: 35254-96b Location: Upper D: 3rd Officer-Supplemental

Concentration (s/cm²): 3700 Asbestos Type(s): Amosite Chrysotile

Area (cm2): 100 Density (s/mm²): 15.4

Lab No.:6541820 Client No.: 35254-97b

Location: Boat D: Chief Officer-Supplemental

Heating Duct

Concentration (s/cm²): <3700 Asbestos Type(s): None Detected

Area (cm2): 100 Density (s/mm²): <7.69

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Signature: Analyst:

Dated: 6/28/2018 6:30:55

Page 1 of 4

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

CCGS-NGCC, Bartlett Chief Engineer From: Sent: June-27-18 2:31 PM To: Chaikin Gabriel; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Cc: Officer; CCGS-NGCC, Bartlett Engine Room FW: Bartlett - Possible Asbestos Spill Subject: Importance: High Yes Sorry for neglecting to cc. & And thanks for further cleaning & air testing recommendations. Ross McKenzie Chief Engineer, CCGS Bartlett BartlettCE@bar.ccgs-ngcc.gc.ca BartlettChief@gmail.com for files above 5 MB From: Sent: June-27-18 2:28 PM To: CCGS-NGCC, Bartlett Chief Engineer Cc: CCGS-NGCC, Bartlett Captain; Chaikin Gabriel; Subject: Re: Bartlett - Possible Asbestos Spill Hi Ross, please cc. and on all correspondence so we can assure rapid response. Sealing it was good. We will sample the material tomorrow. I would ask QM to Hepa vacuum and damp wipe all surfaces within 6 feet. We can set up a couple of ambients on either side in the morning. Sent from my Samsung Galaxy smartphone. ----- Original message -----From: "CCGS-NGCC, Bartlett Chief Engineer" < BartlettCE@ccgs-ngcc.gc.ca> Date: 2018-06-27 3:19 PM (GMT-07:00) Cc: "CCGS-NGCC, Bartlett Captain" < BartlettCO@ccgs-ngcc.gc.ca >, Chaikin Gabriel < Gabriel.Chaikin@dfompo.gc.ca> Subject: Bartlett - Possible Asbestos Spill Greetings am concerned that we may have a small scale asbestos spill on Upper Deck Alleyway.

CME worker worker was digging into cement / Deck Screed with hand tools, and

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2. Found & exposed what appears to be an asbestos fiber layer

We had a suited & masked worker erect poly containment barriers on either side of potential "spill" area.

Should we be taking any other action? Re: Air sampling etc. There is currently an air sample being collected fwd of this area (outside of ER Stb'd), and on the port side Upper Deck.

Regards,

Ross McKenzie Chief Engineer, CCGS Bartlett

Cell:

<u>BartlettCE@bar.ccgs-ngcc.gc.ca</u> <u>BartlettChief@gmail.com</u> for files above 5 MB

CCGS-NGCC, Bartlett Captain

From:

Chaikin, Gabriel <Gabriel.Chaikin@dfo-mpo.gc.ca>

Sent:

June-28-18 10:00 PM

To:

CCGS-NGCC, Bartlett Chief Engineer, CCGS-NGCC, Bartlett Captain

Subject:

Fw: Bartlett Air Trunking

Attachments:

35254 duct wipes.pdf

Chief, Captain;

This is a surprise but it is good we found it now. I'm glad that Scott arranged the additional wipe samples.

I will inform Superior, PSPC & CME. I believe we should proceed with the cleaning of the affected areas first. We will retest the bridge, especially, once George Koherst has completed his work in the consoles. We should as a team discuss any additional ducting testing before we limit the boundaries of the cleaning to these known areas.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

Sent: Thursday, June 28, 2018 20:51

To: Chaikin, Gabriel

Cc: CCGS-NGCC, Bartlett Chief Engineer;

Subject: RE: Bartlett Air Trunking

Good evening, please find attached the results of wipes samples collected in HVAC ducts and post-cleaning in the Stack last week. Summary as follows.

Ducts

Expected Ambient range

- Upper Deck Cabin U-38 Supplemental Heating Duct (chrysotile)
- Upper Deck 3rd Officer's Cabin Supplemental Heating Duct (chrysotile, amosite)

Moderate range

- Boat Deck Fan Room (amosite, chrysotile)
- Poop Deck, Alley Adjacent Galley, Recirc Duct (chrysotile)

Elevated

Wheelhouse (chrysotile, amosite)

Stack (clearance wipes) - all expected ambient levels. Asbestos types detected were chrysotile and tremolite.

Recommendations:

Have a qualified abatement contractor clean the HVAC system, or a qualified duct cleaner that is trained and experienced cleaning asbestos-contaminated HVAC systems.

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- · Redo surface wipes samples following cleaning.
- Conduct ambient air testing with HVAC running after the system has been cleaned, inspected, and tested.
- Apply an approved encapsulated to surfaces within the Stack. Additional cleaning is not warranted at this time.
 Follow asbestos procedures when conducting maintenance work in this space.

Note: ambient air testing during while the vessel was at sea did not show an air quality issue with regard to airborne asbestos.

Let me know if you have any questions. I'll be available from 10:30 am tomorrow.

Best,

Project Manager North West Envronmental Group Ltd.

Cell:

Office: 250-384-9695 ext

201 - 415 Gorge Road East Victoria, BC V8T 2W1

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: June 28, 2018 2:09 PM

To:

Cc: CCGS-NGCC, Bartlett Chief Engineer < BartlettCE@ccgs-ngcc.gc.ca>

Subject: Bartlett Air Trunking

Have you received the results of the seven samples that were taken in the ventilation under direction of Chief Scott Ware?

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.: 35254-91b

Location: Upper D: Laundry Room-HVAC Duct Concentration (s/cm²): <3700 Asbestos Type(s): None Detected

Area (cm²): 100 Density (s/mm²): <7.69

Lab No.:6541815 Area (cm2): 100 Client No.: 35254-92b

Location: Boat D: Fan Room-HVAC Duct

Density (s/mm²): 15.4

Concentration (s/cm²): 14800

Asbestos Type(s): Amosite Chrysotile

Lab No.: 6541816 Client No.: 35254-93b Location: Wheelhouse-HVAC Duct

Area (cm2): 100 Density (s/mm²): 115 Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile Amosite

Lab No.: 6541817 Client No.: 35254-94b

Location: Poop D: Alley Adjacent Galley-Main Concentration (s/cm²): 29600

Recirc Duct

Asbestos Type(s): Chrysotile

Area (cm2): 100

Density (s/mm²): 30.8

Lab No.:6541818 Client No.: 35254-95b Location: Upper D: Cabin U-38 Supplemental

Heating Duct

Concentration (s/cm²): 3700 Asbestos Type(s): Chrysotile

Area (cm2): 100 Density (s/mm²): 7.69

Lab No.: 6541819 Client No.: 35254-96b Location: Upper D: 3rd Officer-Supplemental

Heating Duct

Area (cm2): 100 Density (s/mm²): 15.4 Concentration (s/cm²): 3700

Asbestos Type(s): Amosite Chrysotile

Lab No.: 6541820 Client No.: 35254-97b Location: Boat D: Chief Officer-Supplemental

Heating Duct

Area (cm2): 100 Density (s/mm²): <7.69 Concentration (s/cm²): <3700 Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Signature: Analyst:

Dated: 6/28/2018 6:30:55

Page 1 of 4

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ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Rev #2, 6/28/2018

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 6541821 Client No.: 35254-98b Location: Field Blank Area (cm2): 100 Density (s/mm²): <19.2 Concentration (s/cm²): <185 Asbestos Type(s): None Detected

Lab No.:6541822 Location: Stack-Stbd Air Supply Plenum Client No.: 35254-102b Area (cm²): 100

Concentration (s/cm²): 6660 Asbestos Type(s): Chrysotile

Density (s/mm²): 692

Lab No.:6541823 Client No.: 35254-103b Location: Stack-Main Engine Water Jacket Tank Concentration (s/cm²): <617

Area (cm2): 100

Asbestos Type(s): None Detected Density (s/mm²): <19.2

Lab No.: 6541824 Client No.: 35254-104b

Location: Stack-Exhaust Pipe Support Strut

Concentration (s/cm²): 6940 Area (cm2): 100 Asbestos Type(s): Chrysotile

Density (s/mm²): 288

Lab No.:6541825 Location: Stack-Bulkhead Stiffener Concentration (s/cm²): 1730

Client No.: 35254-105b Area (cm²): 400

Density (s/mm²): 288

Asbestos Type(s): Chrysotile Tremolite

Lab No.:6541826 Client No.: 35254-106b Location: Field Blank Area (cm²): Blank **Density (s/mm²):** <7.69 Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

Dated: 6/28/2018 6:30:55

Approved By:

Frank E. Ehrenfeld, III

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566

566679 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/28/2018 6:30:55

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date:

6/27/2018

201 - 415 Gorge Road East

Report No.:

566679 - TEM Dust Wipe

Client: NOR765

Victoria BC V8T 2W1

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

Dated: 6/28/2018 6:30:55

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18) Note: *Results are for informational purposes only. Samples received on 0.8 um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541814 Client No.: 35254-91b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings: 10 Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²):3700

Area Sampled (cm²):100

Location: Upper D: Laundry Room-HVAC Duct Filter Size (mm²):962

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): <3700

Asbestos Type(s): None Detected

Filter Type: MCE Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6541815 Client No.: 35254-92b

Volume Filtered (mL):0.5 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69 Detection Limit (s/cm²): 7400

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Boat D: Fan Room-HVAC Duct

Asbestos Structures: 2

Structures < 5 Microns: 2 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 14800

Asbestos Type(s): Amosite

Chrysotile

Filter Type:MCE Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<7400 Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

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CERTIFICATE OF ANALYSIS

North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541816

Client No.: 35254-93b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6541817 Client No.: 35254-94b

Volume Filtered (mL):0.5 Dilution Factor (mL):50 **Grid Openings: 10**

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69 Detection Limit (s/cm²):7400

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Wheelhouse-HVAC Duct

Asbestos Structures: 6

Structures < 5 Microns: 5 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 115

Structure Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile

Amosite

Area Sampled (cm²):100

Location: Poop D: Alley Adjacent Galley-Main

Recirc Duct

Asbestos Structures: 4

Structures < 5 Microns: 3 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 30.8 Structure Concentration (s/cm²): 29600

Asbestos Type(s): Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Filter Type: MCE Filter Size (mm²):962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<7400

Non-Asbestos Type(s):

None Detected

Please refer to the	he Preface of the	s report for further	information regar	ding your ana	lysis
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Date Received: Date Analyzed:

6/25/2018 06/27/2018

Signature:

Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541818

Client No.: 35254-95b

Volume Filtered (mL): 1 Dilution Factor (mL): 50

Grid Openings: 10 Opening Area (mm²): 0.013

Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²): 3700

Area Sampled (cm²):100

Location: Upper D: Cabin U-38 Supplemental

Heating Duct

Asbestos Structures: 1

Structures < 5 Microns: 1

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6541819

Client No.:35254-96b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings: 10 Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.130 Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²):1850

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):100

Location: Upper D: 3rd Officer-Supplemental

Heating Duct

Asbestos Structures: 2

Structures < 5 Microns: 1 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<1850

Non-Asbestos Type(s):

None Detected

Please re	er to	the I	Preface o	fthis	s report fo	r further	r informat	tion re	garding	your	analy	ys15.
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Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank F. Ehrenfeld III

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Location: Boat D: Chief Officer-Supplemental

Lab No.:6541820

Client No.: 35254-97b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings: 10 Opening Area (mm²):0.013

Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):3700

Area Analyzed (mm²):0.130

Heating Duct Asbestos Structures: None Detected

Area Sampled (cm²):100

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69

None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structures < 5 Microns: None Detected

Structure Concentration (s/cm²): <3700 Asbestos Type(s):

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<3700 Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6541821 Client No.: 35254-98b

Volume Filtered (mL):50 Dilution Factor (mL):50 **Grid Openings: 4** Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):185

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100 Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <185

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185 Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541822

Client No.: 35254-102b

Volume Filtered (mL):50 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²): 185

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6541823 Client No.: 35254-103b

Volume Filtered (mL): 15 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):617

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Asbestos Structures: 36

Structures < 5 Microns: 33 Structures ≥ 5 µm: 3

Structure Density (s/mm²): 692 Structure Concentration (s/cm²): 6660

Asbestos Type(s):

Chrysotile

Filter Type:MCE Location: Stack-Stbd Air Supply Plenum

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185

Non-Asbestos Type(s):

None Detected

Area Sampled (cm²):100

Location: Stack-Main Engine Water Jacket Tank Filter Size (mm²):962

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <617

Asbestos Type(s): None Detected

Filter Type: MCE

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

Date Analyzed:

Signature: Analyst:

6/25/2018 06/27/2018

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541824

Client No.: 35254-104b

Volume Filtered (mL):20 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520

Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):463

Area Sampled (cm²):100

Location: Stack-Exhaust Pipe Support Strut

Asbestos Structures: 15

Structures < 5 Microns: 13 Structures ≥ 5 µm: 2

Structure Density (s/mm²): 288

Structure Concentration (s/cm²): 6940 Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²):<463

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541825 Client No.: 35254-105b

Volume Filtered (mL): 20 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²): 116

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):400

Location: Stack-Bulkhead Stiffener

Asbestos Structures: 15

Structures < 5 Microns: 12 Structures ≥ 5 µm: 3

Structure Density (s/mm²): 288 Structure Concentration (s/cm²): 1730

Asbestos Type(s):

Chrysotile Tremolite

Filter Type:MCE Filter Size (mm²):962

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<116

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

Date Analyzed:

Signature: Analyst:

6/25/2018 06/27/2018

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

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201 - 415 Gorge Road East

BC V8T 2W1

Report Date:

6/27/2018

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Report No.:
Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

No.: 35254

Client: NOR765

Victoria

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541826

Client No.: 35254-106b

Volume Filtered (mL):50
Dilution Factor (mL):50
Grid Openings:10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):NA

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²):Blank Location:Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69
Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Fronk E Chrenfold III

Frank E. Ehrenfeld, III Laboratory Director



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 29, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Comment	Overloaded with Welding Dust	Overloaded with Welding Dust						Overloaded with Welding Dust		
100	N/A	N/A	٧	<	>	<	>	N/A	٧	
an/a	N/A	N/A	3	>	^	>	Μ	N/A	^	
Concen. (fib/mL)	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01
Density Concen. (fib/mm2) (fib/mL)	N/A	N/A	2.55	7.01	5.73	8.92	5.10	N/A	3,18	0.00
Volume (L)	1098.62	1082.32	1950	1953.25	1956.96	1982.08	949	130	818.26	0
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	Ю	Ю	2.0	2.5	4.5	0.7	4.0	OL	2.5	0.0
Time (Mins)	337	332	009	601	604	809	767	40	251	0
Time Off	13:33	13:34	18:07	18:12	18:20	18:29	18:36	14:31	18:42	00:00
Time On	92:20	08:02	08:07	08:11	08:16	08:21	13:44	13:51	14:31	00:00
Avg. Flow Rate (lpm)	3.26	3.26	3.25	3.25	3.24	3.26	3.25	3.25	3.26	0
Analyst	BR	BR	BR	BR	BR	BR	BR	ВК	BR	BR
Type*	AMB	АМВ	AMB	AMB	AMB	AMB	AMB	AMB	AMB	оc
Area	(AMB) MCR 1	(AMB) AMS 1	(AMB) Aft Oilers Cabin	May-31-2018 Jun-01-2018 (AMB) Lounge	(AMB) Bridge	(AMB) Gym	(AMB) MCR 2	(AMB) AMS 2	(AMB) AMS 3	35254-10a May-31-2018 Jun-01-2018 (QC) Field Blank
Date Analysed	Jun-01-2018	Jun-01-2018	May-31-2018 Jun-01-2018	Jun-01-2018	May-31-2018 Jun-01-2018	May-31-2018 Jun-01-2018 (AMB) Gym	Jun-01-2018	May-31-2018 Jun-01-2018 (AMB) AMS 2	May-31-2018 Jun-01-2018	Jun-01-2018
Date Coffected	May-31-2018 Jun-01-2018 (AMB) MCR 1	35254-2a May-31-2018 Jun-01-2018 (AMB) AMS 1	May-31-2018	May-31-2018	May-31-2018	May-31-2018	May-31-2018 Jun-01-2018	May-31-2018	May-31-2018	May-31-2018
Sample No	35254-1a	35254-2a	35254-3a	35254-4a	35254-5a	35254-6a	35254-7a	35254-8a	35254-9a	35254-10a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Comment	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
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^/v	\$	۸		>		>	>	>		>	8		≩		>	>
Concen. (fib/ml.)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15,92	1.27	16.56	00.00	8.92	7.64	12.10	3.18	9.55	5.10	00'0	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305.6
# Fields	100	100	001	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	6.0	9.5	2.5	7.5	4.0	0.0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time O∰	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (Ipm)	2.61	2.61	0	2,92	0	2.92	16.1	16.1	0	2,4	2.61	0	2.64	0	2.18	14.41
Analyst	JD	Дſ	ac	BR	BR	BR	BR	BR	BR	JD	JD	JD	ЭD	JD.	JD	Ωſ
Туре*	occ	AMB	оc	AMB	သ	AMB	AC	AC	ည	AMB	осс	ည	AMB	သွ	AMB	AC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance	(QC) Field Blank	(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational (AMS)	(QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed		Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	35254-17a Jun-06-2018 Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	35254-11a Jun-05-2018 Jun-06-2018	35254-12a Jun-05-2018 Jun-06-2018	Jun-05-2018	Jun-06-2018	Jun-06-2018	35254-16a Jun-06-2018	Jun-06-2018	35254-18a Jun-06-2018	Jun-06-2018	Jun-07-2018	35254-21a Jun-07-2018 Jun-08-2018	35254-22a Jun-07-2018	35254-23a Jun-08-2018	35254-24a Jun-08-2018	35254-25a Jun-09-2018	35254-26a Jun-09-2018
Sample No	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a



PAT PROGRAMS AND PROFICE TESTING PROFICE WAS AND PROFICE OF THE PROFILE OF THE PR

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Comment																		Steve / Top Level / PAPR	Dennis / 4th Level / PAPR
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A/w	3	≥	≥	≥	>	>	>	>			^		^	^		^	W	۸	>
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5,10	3.82	5.10	15.92	17.20	22.93	22.29	00.0	00.00	8.28	00.0	21.66	13.38	00.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512,95	2497.72	0	0	545.49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	500	0	153	153	0	149	143	32	28
a a a a a a	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
o di	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (ipm)	2.1	2.35	15.46	15.23	15.46	15.23	15.23	15.23	0	0	2.61	0	16	16	0	15.25	15.25	2.6	2.6
Analyst	ac	JD	Ω	O.	ЭD	QC	JD	JD	ar	ar.	Ωſ	ar	ar	ar	Ωſ	JD	Ωſ	ЭС	Ωſ
Type*	AMB	AMB	AC	AC	AC	AC	AC	AC	оc	သု	AMB	2	AC	AC	ည	AC	AC	220	220
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	(OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Date Collected	35254-27a Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	35254-42a Jun-15-2018	35254-43a Jun-15-2018	Jun-15-2018	35254-45a Jun-15-2018
Sample	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a



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Comment									,											Pump failure		
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^/^	W		^	3		^	^	>	^			>		Λ	Λ			>	3			3
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	16.1	00.00	7.01	5.10	1.27	13.38	7.01	27.39	22.93	1.27	3.18	00.00	00.00	0.64	1.27	1.27	00.00	9.55	4.46	N/A	1.27	3.18
Volume (L)	458.4	0	2168	2168	0	2354.48	2354.48	2354.48	2354.48	0	0	869.75	0	2555.12	2648.6	0	0	183.06	775.18	N/A	0	742,5
# Fields	100	100	100	100	100	100	100	100	001	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.5	0.0	2'2	4.0	1.0	10.5	5.5	21.5	18.0	1.0	2.5	0.0	0.0	5.0	1.0	1.0	0.0	7.5	3.5	0.9	1.0	2.5
Time (Mins)	191	0	271	271	0	152	152	152	152	0	0	355	0	164	170	0	0	81	343	N/A	0	297
Time of	13:56	00:00	15:34	15:34	00:00	11:28	11:28	11:41	11:41	00:00	00:00	14:51	00:00	12:57	12:59	00:00	00:00	08:57	13:48	N/A	00:00	13:42
e e	10:45	00:00	11:03	11:03	00:00	08:56	08:56	60:60	60:60	00:00	00:00	08:56	00:00	10:13	10:09	00:00	00:00	07:36	08:05	08:01	00:00	08:45
Avg. Flow Rate (ipm)	2.4	0	8	8	0	15.49	15,49	15.49	15,49	0	0	2.45	0	15.58	15.58	0	0	5.26	2.26	2.25	0	2.5
Analyst	JD.	ar	Qſ	er.	αí	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	JD
Type*	АМВ	ებ	AC	AC	ЭÒ	AC	AC	AC	AC	óс	эð	АМВ	óс	AC	AC	ЭÒ	ЭÒ	220	AMB	AMB	о́с	AMB
Area	(AMB) MER Below Stack	(QC) Field Blank	(AC) Wheelhouse	(AC) Wheelhouse	(QC) Field Blank	(AC) Cargo Hold 1	(AC) Cargo Hold 1	(AC) Winch Room 1	(AC) Winch Room 2	(QC) Field Blank 1	(QC) Field Blank 2	(AMB) Mer Below Stack	(QC) Field Blank	(AC) Stack	(AC) Stack	(QC) Field Blank	(QC) Field Blank	(OCC) MER	(AMB) U.D. Port Alleyway	(AMB) U.D. Starboard Alleyway	(QC) Field Blank	(AMB) Ambient 1
Date Analysed	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018		Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-18-2018	35254-55a Jun-17-2018 Jun-18-2018	Jun-18-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018	Jun-21-2018 Jun-21-2018	Jun-21-2018	Jun-21-2018	Jun-22-2018 (OCC) MER	Jun-22-2018	Jun-22-2018	Jun-22-2018	Jun-25-2018
Date Collected	35254-46a Jun-16-2018	Jun-16-2018	Jun-16-2018 Jun-17-2018	35254-49a Jun-16-2018	35254-50a Jun-16-2018 Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	35254-54a Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018	Jun-21-2018	35254-61a Jun-21-2018	Jun-21-2018	Jun-22-2018	Jun-22-2018	Jun-22-2018	Jun-22-2018	Jun-23-2018
Sample	35254-46a	35254-47a	35254-48a	35254-49a	35254-50a	35254-51a	35254-52a	35254-53a	35254-54a	35254-55a	35254-56a	35254-57a	35254-58a	35254-59a	35254-60a	35254-61a	35254-62a	35254-63a	35254-64a	35254-65a	35254-66a	35254-67a



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a/a	3	3	₹	>	>	>	>	≥	>	>		>	>	>
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	6.37	1,27	3.18	10.19	7.01	17.83	9.55	0.64	9.55	2.55	00.0	7.01	8.28	8.28
Volume (L)	742.5	655	662.5	612	612	952.32	952.32	917.49	903.21	907.21	0	627.44	627.44	632.5
# Helds	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	5.0	1.0	2.5	0'8	5.5	14.0	7.5	0.5	7.5	2.0	0.0	5.5	6.5	6.5
Time (Mins)	297	797	265	240	240	372	372	357	357	353	0	248	248	250
Time	13:44	12:53	12:57	14:18	14:25	14:52	14:52	15:08	15:11	15:13	09:11	11:42	11:44	11:48
Time On	08:47	08:31	08:32	10:18	10:25	08:40	08:40	09:11	09:14	09:50	09:11	07:34	07:36	07:38
Avg. Flow Rate (Ipm)	2.5	2.5	2.5	2.55	2,55	2.56	2.56	2.57	2.53	2.57	0	2.53	2.53	2,53
Analyst	JD	JD	ΩC	BR	BR	e e	Q.	O.	OF.	Qſ	ar	e.	Ωſ	Οſ
Type*	AMB	AMB	AMB	AMB	AMB	АМВ	AMB	АМВ	AMB	АМВ	SQ.	АМВ	AMB	АМВ
Area	(AMB) Ambient 2	(AMB) Ambient 1	Jun-25-2018 (AMB) Ambient 2	Jun-27-2018 (AMB) Adj. 3rd Eng	Jun-27-2018 (AMB) Ambient 2	(AMB) U.D. Starboard Alleyway	(AMB) U.D. Port Alleyway	(AMB) U.D. Starboard Alleyway	(AMB) U.D. Port Alleyway	(AMB) U.D. Aft Starboard Alleyway	Field Blank	(AMB) U.D. Starboard Alleyway	Jun-29-2018 (AMB) U.D. Port Alleyway	(AMB) U.D. Aft Starboard Alleyway
Date Analysed	Jun-25-2018	Jun-25-2018		Jun-27-2018	Jun-27-2018	Jun-28-2018	Jun-28-2018	Jun-29-2018	Jun-29-2018	Jun-29-2018	Jun-29-2018		Jun-29-2018	Jun-29-2018
Date Collected	35254-68a Jun-23-2018	Jun-24-2018	35254-70a Jun-24-2018	Jun-26-2018	Jun-26-2018	Jun-27-2018	35254-74a Jun-27-2018	Jun-28-2018	Jun-28-2018	35254-77a Jun-28-2018	35254-78a Jun-28-2018	35254-79a Jun-29-2018	35254-80a Jun-29-2018	35254-81a Jun-29-2018
Sample No	35254-68a	35254-69a	35254-70a	35254-71a	35254-72a	35254-73a	35254-74a	35254-75a	35254-76a	35254-77a	35254-78a	35254-79a	35254-80a	35254-81a



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*Legend and Explanation of Terms

CR - dean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml AMB - ambient; sample collected in an occupied space adjacent to the work area, Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area, Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/ml. (unprotected persons)

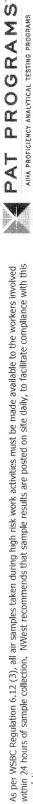


Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: Report No.:

6/27/2018 566679 - TEM Dust

Wipe

Rev #2, 6/28/2018

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Project:

CCGS Bartlett-General Hazmat Consulting

Client: NOR765

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Client No.: 35254-91b

Client No.:35254-92b

Location: Upper D: Laundry Room-HVAC Duct Concentration (s/cm²): <3700

Asbestos Type(s): None Detected

Area (cm2): 100

Density (s/mm²): <7.69

Lab No.:6541815 Location: Boat D: Fan Room-HVAC Duct Concentration (s/cm²): 14800

Asbestos Type(s): Amosite Chrysotile

Area (cm2): 100 Density (s/mm²): 15.4

Lab No.:6541816

Location: Wheelhouse-HVAC Duct

Concentration (s/cm²): 55500

Client No.: 35254-93b Area (cm²): 100 Asbestos Type(s): Chrysotile Amosite

Density (s/mm²): 115

Lab No.:6541817

Location: Poop D: Alley Adjacent Galley-Main Concentration (s/cm²): 29600

Asbestos Type(s): Chrysotile

Recirc Duct

Area (cm2): 100 Density (s/mm²): 30.8

Client No.: 35254-94b

Concentration (s/cm²): 3700

Lab No.:6541818 Client No.: 35254-95b Location: Upper D: Cabin U-38 Supplemental Heating Duct

Asbestos Type(s): Chrysotile

Area (cm2): 100

Density (s/mm²): 7.69

Lab No.:6541819 Client No.: 35254-96b Location: Upper D: 3rd Officer-Supplemental

Heating Duct

Concentration (s/cm²): 3700

Area (cm2): 100

Density (s/mm²): 15.4

Asbestos Type(s): Amosite Chrysotile

Lab No.:6541820 Client No.: 35254-97b Location: Boat D: Chief Officer-Supplemental

Heating Duct

Concentration (s/cm²): <3700

Area (cm2): 100

Asbestos Type(s): None Detected

Density (s/mm²): <7.69

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

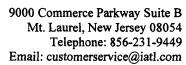
Dated: 6/28/2018 6:30:55

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

s.19(1)

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: Report No.:

6/27/2018 566679 - TEM Dust

Wipe

Rev #2, 6/28/2018

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Project:

CCGS Bartlett-General Hazmat Consulting

Client: NOR765

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541821 Client No.: 35254-98b Location: Field Blank Area (cm2): 100

Concentration (s/cm²): <185 Asbestos Type(s): None Detected

Density (s/mm²): <19.2

Lab No.:6541822 Client No.: 35254-102b Location: Stack-Stbd Air Supply Plenum

Concentration (s/cm²): 6660 Asbestos Type(s): Chrysotile

Area (cm2): 100

Density (s/mm²): 692

Lab No.: 6541823 Client No.: 35254-103b Location: Stack-Main Engine Water Jacket Tank Concentration (s/cm²): <617

Area (cm2): 100

Asbestos Type(s): None Detected

Density (s/mm²): <19.2

Lab No.:6541824 Client No.: 35254-104b Location: Stack-Exhaust Pipe Support Strut

Concentration (s/cm²): 6940

Area (cm2): 100

Density (s/mm²): 288

Asbestos Type(s): Chrysotile

Lab No.: 6541825

Location: Stack-Bulkhead Stiffener

Concentration (s/cm²): 1730

Client No.:35254-105b

Area (cm²): 400

Density (s/mm²): 288

Asbestos Type(s): Chrysotile Tremolite

Lab No.:6541826 Client No.: 35254-106b

Location: Field Blank Area (cm2): Blank

Density (s/mm²): <7.69

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

Dated: 6/28/2018 6:30:55

Approved By:

Page 2 of 4

Frank E. Ehrenfeld, III



s.19(1)

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached

Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iati.com.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/28/2018 6:30:55



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> 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH

(6)Note: Sample turbidity > 1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13) Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.

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Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria
Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 30, 2018
Client Job or PO#: F1782-180965
Project number: 35254

Sample No	Date Collected	Date Analysed	Area	Туре*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)		v/w	rođ	Comment
35254-1a	May-31-2018	Jun-01-2018	(AMB) MCR 1	AMB	BR	3.26	07:56	13:33	337	OL	100	1098.62	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-2a	May-31-2018	Jun-01-2018	(AMB) AMS 1	АМВ	BR	3.26	08:02	13:34	332	OL	100	1082.32	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-3a	May-31-2018	Jun-01-2018	(AMB) Aft Oilers Cabin	AMB	BR	3.25	08:07	18:07	600	2.0	100	1950	2.55	<0.01	w	<	
35254-4a	May-31-2018	Jun-01-2018	(AMB) Lounge	AMB	BR	3.25	08:11	18:12	601	5.5	100	1953.25	7.01	<0.01	٧	<	
35254-5a	May-31-2018	Jun-01-2018	(AMB) Bridge	AMB	BR	3.24	08:16	18:20	604	4.5	100	1956.96	5.73	<0.01	W	<	
35254-6a	May-31-2018	Jun-01-2018	(AMB) Gym	AMB	BR	3,26	08:21	18:29	608	7.0	100	1982.08	8.92	<0.01	٧	<	
35254-7a	May-31-2018	Jun-01-2018	(AMB) MCR 2	AMB	BR	3.25	13:44	18:36	292	4.0	100	949	5.10	<0.01	w	<	
35254-8a	May-31-2018	Jun-01-2018	(AMB) AMS 2	AMB	BR	3.25	13:51	14:31	40	QL	100	130	N/A	N/A	N/A	N/A	Overloaded with Welding Dust
35254-9a	May-31-2018	Jun-01-2018	(AMB) AMS 3	AMB	BR	3.26	14:31	18:42	251	2.5	100	818.26	3.18	<0.01	>	٧	
35254-10a	May-31-2018	Jun-01-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	LOQ	Comment
35254-11a	Jun-05-2018	Jun-06-2018	(OCC) Occupational (Gym)	occ	JD	2.61	12:42	13:06	24	4.5	100	62.64	5.73	<0.01	w	<	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces
35254-12a	Jun-05-2018	Jun-06-2018	(AMB) Cargo Hold Adj. Gym Entrance	AMB	JD	2.61	12:42	14:23	101	12.5	100	263.61	15.92	0.023	٧	<	
35254-13a	Jun-05-2018	Jun-06-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-14a	Jun-06-2018	Jun-07-2018	(AMB) Cargo Hold Adj. Gym	АМВ	BR	2.92	08:06	18:22	616	13.0	100	1798.72	16.56	<0.01	٧	<	
35254-15a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-16a	Jun-06-2018	Jun-07-2018	(AMB) MER Adj. AMS Entry	AMB	BR	2.92	15:26	18:44	198	7.0	100	578.16	8.92	<0.01	٧	<	
35254-17a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	6.0	100	2270.1	7.64	<0.01	٧	<	
35254-18a	Jun-06-2018	Jun-07-2018	(AC) Gym	AC	BR	16.1	18:30	20:51	141	9.5	100	2270,1	12,10	<0.01	٧	<	
35254-19a	Jun-06-2018	Jun-07-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254 - 20a	Jun-07-2018	Jun-08-2018	(AMB) MER Adj. AMS Entryway	AMB	סנ	2.4	09:23	16:04	401	7.5	100	962.4	9.5 5	<0.01	٧	<	
35254-21a	Jun-07-2018	Jun-08-2018	(OCC) Occupational (AMS)	occ	סנ	2.61	14:35	15:26	51	4.0	100	133.11	5.10	<0.01	w	<	Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces
352 54- 22a	Jun-07-2018	Jun-08-2018	(QC) Field Blankl	QC	סנ	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-23a	Jun-08-2018	Jun-08-2018	(AMB) Poop Deck Port Alleyway	AMB	JD	2.64	09:04	15:01	357	5.0	100	942.48	6.37	<0.01	w	<	
35254-24a	Jun-08-2018	Jun-08-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.5	100	0	1.91	<0.01			
35254-25a	Jun-09-2018	Jun-10-2018	(AMB) Main Crew Deck	AMB	JD	2.18	10:57	16:50	353	5.5	100	769.54	7.01	<0.01	٧	<	
35254-26a	Jun-09-2018	Jun-10-2018	(AC) 3rd Officer Cabin	AC	3D	14,41	15:40	18:20	160	12.0	100	2305.6	15.29	<0.01	٧	<	

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Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg.	Time	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (flb/mm2)	Concen. (fib/mL)	v/w	rod	Comment
		,,				Rate (ipm)			,			(-)	,				
35254-27a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Hospita	AMB	D	2.1	11:53	17:06	313	3.0	100	657.3	3.82	<0.01	v	<	
35254-28a	Jun-10-2018	Jun-11-2018	(AMB) Poop Deck - Alleyway Adj. Two Oilers	АМВ	סנ	2.35	11:54	17:06	312	4.0	100	733.2	5.10	<0.01	w	<	-
35254-29a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	JD	15.46	16:13	19:02	169	3.0	100	2612.74	3.82	<0.01	W	<	
35254-30a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - 3rd Officer Cabin	AC	סנ	15.23	16:14	19:02	168	4.0	100	2558.64	5.10	<0.01	w	<	
35254-31a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	DΣ	15.46	16:24	19:12	168	12.5	100	2597.28	15.92	<0.01	٧	<	
35254-32a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Sr. Eng. Cabin	AC	סנ	15.23	16:25	19:12	167	13.5	100	2543.41	17.20	<0.01	٧	<	
35254-33a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:36	19:21	165	18.0	100	2512.95	22.93	<0.01	٧	<	
35254-34a	Jun-10-2018	Jun-11-2018	(AC) Poop Deck - Aft Oil Cabin	AC	JD	15.23	16:37	19:21	164	17.5	100	2497.72	22.29	<0.01	٧	<	
35254-35a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-36a	Jun-10-2018	Jun-11-2018	(QC) Field Blank	QC	3D	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-37a	Jun-12-2018	Jun-12-2018	(AMB) Alley Adj. Lounge	АМВ	JD	2.61	13:20	16:49	209	6.5	100	545.49	8.28	<0.01	٧	<	
35254-38a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	סנ	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-39a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	D	16	13:58	16:31	153	17.0	100	2448	21.66	<0.01	٧	<	
35254-40a	Jun-12-2018	Jun-12-2018	(AC) Air Clearance	AC	JD	16	13:58	16:31	153	10.5	100	2448	13.38	<0.01	٧	<	
35254-41a	Jun-12-2018	Jun-12-2018	(QC) Field Blank	QC	D	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-42a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	JD	15.25	10:24	12:53	149	4.5	100	2272.25	5.73	<0.01	w	<	
35254-43a	Jun-15-2018	Jun-15-2018	(AC) Air Clearance	AC	DC	15.25	10:34	12:57	143	4.0	100	2180.75	5.10	<0.01	w	<	
3525 4-44 a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	occ	ΟĽ	2.6	14:40	15:12	32	9.5	100	83.2	12,10	0.056	٧	<	Steve / Top Level / PAPR
35254 - 45a	Jun-15-2018	Jun-15-2018	(OCC) Occupational	осс	JD	2.6	14:47	15:15	28	2.5	100	72.8	3.18	<0.01	vv	<	Dennis / 4th Level / PAPR

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Sample No	Date Coffected	Date Analysed	Area	Туре*	Analyst	Avg. Flow Rate (lpm)	Time On	Time Off	Time (Mins)	# Fibres	# Pieids	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	V/VV	rođ	Comment
35254-46a	Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	JD	2.4	10:45	13:56	191	1.5	100	458.4	1.91	<0.01	W	<	
35254-47a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
3525 4-4 8a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	٧	<	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	סנ	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	W	<	
35254-50a	Jun-16-2018	Jun-17-2018	(QC) Field Blank	QC	JD	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-51a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	08:56	11:28	152	10.5	100	2354.48	13.38	<0.01	٧	<	
35254-52a	Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.4 9	08:56	11:28	152	5.5	100	2354.48	7.01	<0.01	٧	<	
35254-53a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	09:09	11:41	152	21.5	100	2354.48	27.39	<0.01	٧	<	
35254-54a	Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	09:09	11:41	152	18.0	100	2354.48	22.93	<0.01	٧	<	
35254-55a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-56a	Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	QC	BR	0	00:00	00:00	0	2.5	100	0	3.18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	08:56	14:51	355	0.0	100	869.75	0.00	<0.01	W	<	
35254-58a	Jun-19-2018	Jun-19-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	o	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	8	<	
35254-60a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	V	<	
35254-61a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-62a	Jun-21-2018	Jun-21-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-63a	Jun-22-2018	Jun-22-2018	(OCC) MER	occ	BR	2.26	07:36	08:57	81	7.5	100	183.06	9.55	0.02	٧	<	
35254-64a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Port Alleyway	AMB	BR	2.26	08:05	13:48	343	3.5	100	775.18	4.46	<0.01	w	<	
35254-65a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Starboard Alleyway	AMB	BR	2.25	08:01	N/A	N/A	6.0	100	N/A	N/A	N/A			Pump failure
35254-66a	Jun-22-2018	Jun-22-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
35254-67a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 1	AMB	סנ	2.5	08:45	13:42	297	2.5	100	742.5	3.18	<0.01	w	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

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Sample No	Date Collected	Data Analysed	Artes	Type*	Analyst	Avg. Flow Rate (ipm)	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/w	rođ	Comment
35254-68a	Jun-23-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:47	13:44	297	5.0	100	742.5	6.37	<0.01	w	~	
35254-69a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 1	AMB	DΩ	2.5	08:31	12:53	262	1.0	100	655	1.27	<0.01	w	<	
35254 - 70a	Jun-24-2018	Jun-25-2018	(AMB) Ambient 2	AMB	JD	2.5	08:32	12:57	265	2.5	100	662.5	3,18	<0.01	w	<	
35254-71a	Jun-26-2018	Jun-27-2018	(AMB) Adj. 3rd Eng	AMB	BR	2.55	10:18	14:18	240	8.0	100	612	10.19	<0.01	٧	<	
35254-72a	Jun-26-2018	Jun-27-2018	(AMB) Ambient 2	AMB	BR	2,55	10:25	14:25	240	5.5	100	612	7.01	<0.01	٧	<	
35254-73a	Jun-27-2018	Jun-28-2018	(AMB) U.D. Starboard Alleyway	AMB	JD	2.56	08:40	14:52	372	14.0	100	952.32	17.83	<0.01	٧	٧	
35254-74a	Jun-27-2018	Jun-28-2018	(AMB) U.D. Port Alleyway	AMB	JD	2.56	08:40	14:52	372	7.5	100	952.32	9.55	<0.01	٧	٧	
35254-75a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Starboard Alleyway	AMB	סנ	2.57	09:11	15:08	357	0.5	100	917.49	0.64	<0.01	w	٧	
35254-76a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Port Alleyway	AMB	۵Ľ	2.53	09:14	15:11	357	7.5	100	903.21	9.55	<0.01	٧	٧	
35254-77a	Jun-28-2018	Jun-29-2018	(AMB) U.D. Aft Starboard Alleyway	AMB	סנ	2.57	09:20	15:13	353	2.0	100	907.21	2.55	<0.01	w	٧	
35254-78a	Jun-28-2018	Jun-29-2018	Field Blank	QC	JD	0	09:11	09:11	0	0.0	100	0	0.00	<0.01			
35254-79a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Starboard Alleyway	AMB	DC	2.53	07:34	11:42	248	5.5	100	627.44	7.01	<0.01	٧	٧	
35254-80a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Port Alleyway	AMB	DC	2.53	07:36	11:44	248	6.5	100	627.44	8.28	<0.01	٧	٧	
35254-81a	Jun-29-2018	Jun-29-2018	(AMB) U.D. Aft Starboard Alleyway	AMB	QL	2.53	07:38	11:48	250	6.5	100	632.5	8.28	<0.01	٧	٧	
35254-82a	Jun-29-2018	Jun-30-2018	(AC) Watertight Door	AC	BR	15.77	15:24	18:25	181	1.5	100	2854.37	1.91	<0.01	w	٧	
35254-83a	Jun-29-2018	Jun-30-2018	(AC) Watertight Door	AC	BR	15.77	15:38	18:56	198	11.5	100	3122.46	14.65	<0.01	٧	٧	
35254-84a	Jun-29-2018	Jun-30-2018	(OCC) Occupational	occ	BR	2.04	13:17	14:18	61	3.0	100	124.44	3.82	<0.01	w	٧	Occ Myles, Port Watertight Door, Hamme Drill, PAPR.
35254 - 85a	Jun-30-2018	Jun-30-2018	(AC) Engine Room - Forward	AC	BR	17.05	08:55	11:32	157	2.5	100	2676.85	3.18	<0.01	w	<	

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate	Time On	Time Off	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (fib/mm2)	Concen. (fib/mL)	v/vv	roq	Comment
						(lpm)											
35254-86a	Jun-30-2018	Jun-30-2018	(AC) Engine Room - Starboard Aft	AC	BR	17.05	09:00	11:34	154	2.0	100	2625.7	2,55	<0.01	W	<	
35254-87a	Jun-30-2018	Jun-30-2018	(AC) Engine Room - Port Aft	AC	BR	17.05	09:03	11:37	154	1.0	100	2625.7	1.27	<0.01	VV	<	
35254-88a	Jun-30-2018	Jun-30-2018	(QC) Field Blank	QC	BR	0	00:00	00:00	. 0	1.5	100	0	1.91	<0.01			
35254-89a	Jun-30-2018	Jun-30-2018	(QC) Field Blank	QС	8R	0	00:00	00:00	0	0.0	100	0	0.00	<0,01			

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml

AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

OC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



LA8# 202314



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - DH & HVAC Procedures & Testing

Date: July 23, 2018

Client Job or PO#: BARTLETT

Project number: 35917

Collected By CC Collected By CC Comment Collected By 007 ٧ ٧ Concen. v/vv (fib/mL) > > > <0.01 <0.01 <0.01 Density (fib/mm2) 12.10 10.19 15.29 1536 1536 Volume (L) 1536 100 9 100 Fibres 12.0 8.0 Time (Mins) 900 9 900 a me 22:16 21:27 18:42 12:16 Time On 08:42 11:27 Avg. Rate (pm) 2.56 2.56 2.56 Analyst BR Ж BR Type* AMB AMB AMB (AMB) Cabin U-26 (AMB) Cabin U-17 (AMB) Cabin P-1 Area Jul-23-2018 Jul-23-2018 Jul-23-2018 Date Analysed 35917-1a Jul-20-2018 35917-3a Jul-21-2018 Date Collected Jul-20-2018 35917-2a Sample No

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation. "Nwest did not collect the samples, or design or oversee the scope of work or activities on this site. This report only provides analytical results for the samples as they were presented to the Nwest laboratory and do not take into account the site conditions or other factors which may interfere with sampling conditions or contaminant concentrations. Sample results should always be considered in concert with site conditions and other influencing factors."



LAB# 202314

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per ml AMB -- ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area, Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably actievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation. "Nwest did not collect the samples, or design or oversee the scope of work or activities on this site. This report only provides analytical results for the samples as they were presented to the Nwest laboratory and do not take into account the site conditions or other factors which may interfere with sampling conditions or contaminant concentrations. Sample results should always be considered in concert with site conditions and other influencing factors."



2/2

001451

LAB# 202314

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541814 Client No.: 35254-91b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130

Sensitivity (s/mm²):7.69 Detection Limit (s/cm²): 3700 Area Sampled (cm²): 100

Location: Upper D: Laundry Room-HVAC Duct Filter Size (mm²): 962

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): <3700

Asbestos Type(s): None Detected

Filter Type:MCE

Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²): <3700

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541815 Client No.: 35254-92b

Volume Filtered (mL): 0.5 Dilution Factor (mL):50

Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):7400

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Boat D: Fan Room-HVAC Duct

Asbestos Structures: 2

Structures < 5 Microns: 2 Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 14800

Asbestos Type(s):

Amosite Chrysotile Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²): <7400

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

V8T 2W1 Victoria BC

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541816

Client No.: 35254-93b

Volume Filtered (mL):1 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2

Detection Limit (s/cm²):9250

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541817

Client No.: 35254-94b

Volume Filtered (mL):0.5 Dilution Factor (mL):50

Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):7400

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Location: Wheelhouse-HVAC Duct

Asbestos Structures: 6

Structures < 5 Microns: 5

Structures ≥ 5 µm: 1

Structure Density (s/mm²): 115

Structure Concentration (s/cm²): 55500

Asbestos Type(s):

Chrysotile Amosite

Area Sampled (cm²):100

Location: Poop D: Alley Adjacent Galley-Main

Recirc Duct

Asbestos Structures: 4

Structures < 5 Microns: 3

Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 30.8 Structure Concentration (s/cm²): 29600

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Filter Type:MCE

Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²): <7400

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541818

Client No.: 35254-95b

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²):3700

Area Sampled (cm²): 100

Location: Upper D: Cabin U-38 Supplemental

Heating Duct

Asbestos Structures: 1

Structures < 5 Microns: 1

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541819

Client No.: 35254-96b

Volume Filtered (mL):2 Dilution Factor (mL):50

Grid Openings: 10 Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²): 1850

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Upper D: 3rd Officer-Supplemental

Heating Duct

Asbestos Structures: 2

Structures < 5 Microns: 1 Structures $\geq 5 \mu m$: 1

Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 3700

Asbestos Type(s):

Amosite Chrysotile Filter Type: MCE Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<1850

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

V8T 2W1

201 - 415 Gorge Road East

Victoria BC

6/27/2018 Report Date:

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541820

Client No.: 35254-97b

Client: NOR765

Volume Filtered (mL): 1 Dilution Factor (mL):50

Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²):3700

Area Sampled (cm²): 100

Location: Boat D: Chief Officer-Supplemental

Heating Duct

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): <3700

Asbestos Type(s): None Detected

Filter Type:MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541821 Client No.: 35254-98b

Volume Filtered (mL):50 Dilution Factor (mL):50 Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):185

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100 Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures $\geq 5 \mu m$: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <185

Page 4 of 8

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III



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> Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Project:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541822

Client No.: 35254-102b

Volume Filtered (mL):50 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2

Detection Limit (s/cm²):185

Area Sampled (cm²): 100

Location: Stack-Stbd Air Supply Plenum

Asbestos Structures: 36

Structures < 5 Microns: 33 Structures \geq 5 μ m: 3

Structure Density (s/mm²): 692 Structure Concentration (s/cm²): 6660

Asbestos Type(s):

Chrysotile

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²):<185 Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541823 Client No.: 35254-103b

Volume Filtered (mL):15 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²):19.2 Detection Limit (s/cm²):617

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):100

Location: Stack-Main Engine Water Jacket Tank Filter Size (mm²):962

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <617

Asbestos Type(s): None Detected

Filter Type:MCE

Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III



> 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541824

Client No.: 35254-104b

Volume Filtered (mL):20 Dilution Factor (mL):50

Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2

Detection Limit (s/cm²):463

Area Sampled (cm²): 100

Location: Stack-Exhaust Pipe Support Strut

Asbestos Structures: 15

Structures < 5 Microns: 13 Structures $\geq 5 \mu m$: 2

Structure Density (s/mm²): 288

Structure Concentration (s/cm²): 6940

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (μm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²): <463

Non-Asbestos Type(s):

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.: 6541825 Client No.: 35254-105b

Volume Filtered (mL):20 Dilution Factor (mL):50 Grid Openings:4

Opening Area (mm²):0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):116

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):400

Location: Stack-Bulkhead Stiffener

Asbestos Structures: 15

Structures < 5 Microns: 12 Structures $\geq 5 \mu m$: 3

Structure Density (s/mm²): 288 Structure Concentration (s/cm²): 1730

Asbestos Type(s):

Chrysotile Tremolite

Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<116

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018 06/27/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



> 9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date:

6/27/2018

Report No.: 566679 - TEM Dust Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.:

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541826

Client: NOR765

Client No.:35254-106b

Volume Filtered (mL):50 Dilution Factor (mL):50

Grid Openings: 10 Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²): NA

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm2): Blank Location: Field Blank

Asbestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69 Structure Concentration (s/cm²): NA

Asbestos Type(s): None Detected

Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Dated: 6/28/2018 6:30:56

Page 8 of 8



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 27, 2018 **Client Job or PO#:** F1782-180965

Project number: 35254

Overloaded with Welding Dust Overloaded with Welding Overloaded with Welding Comment Sust 007 ۷ ۸ Ν N/A v v ٧ ٧ Density Concen. v/vv (fib/mm2) (fib/mL) N/A N/A Ϋ́ ≥ ≥ ≷ > > ≥ N/A <0.01 <0.01 ΑŽ Š <0.01 <0.01 <0.01 <0.01 <0,01 0.00 Α× 5,73 3.18 N/A 2,55 7.01 8.92 5.10 ξ Volume (L) 1098.62 1953.25 0 1950 949 1082,32 1956,96 1982,08 130 818.26 100 100 100 100 100 100 100 100 Fields 100 9 # Fibres 5.5 4.5 7.0 2.5 0.0 2.0 4.0 Р ರ 힉 Time (Mins) 809 337 601 604 292 251 332 9 8 0 18:12 00:00 F 13:33 13:34 18:07 18:20 18:29 18:36 14:31 18:42 00:00 08:11 08:16 a a 07:56 08:07 14:31 08:02 08:21 13:44 13:51 Avg. Flow Rate (ipm) 3.25 3.26 3.25 3.24 3,26 3.26 3,26 3.25 3.25 0 Analyst Ж Ж BR BR. Ж Ж Ж Ж Ж Ж Type* AMB AMB AMB AMB AMB AMB AMB AMB AMB ည 35254-10a | May-31-2018 | Jun-01-2018 | (QC) Field Blank 35254-3a May-31-2018 Jun-01-2018 (AMB) Aft Oilers Cabin 35254-4a | May-31-2018 | Jun-01-2018 | (AMB) Lounge (AMB) MCR 2 35254-9a | May-31-2018 | Jun-01-2018 | (AMB) AMS 3 Area (AMB) MCR 1 (AMB) AMS 1 35254-5a | May-31-2018 | Jun-01-2018 | (AMB) Bridge May-31-2018 Jun-01-2018 (AMB) AMS 2 (AMB) Gym May-31-2018 Jun-01-2018 35254-7a May-31-2018 Jun-01-2018 35254-1a | May-31-2018 | Jun-01-2018 Date Analysed |May-31-2018 | Jun-01-2018 Date Collected 35254-8a 35254-6a Sample No 35254-2a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this



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Comment	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
007	٧	v		>		٧	<	>		٧	٧		٧		>	v
٨/٨ ١٥٥	3	>		^		>	>	^		>	3		>		۸	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	00.00	8.92	7.64	12.10	3.18	9.55	5.10	00'0	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305.6
# Helds	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	0.9	5*6	2.5	7.5	4.0	0.0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time Off	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
o a	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate	2.61	2.61	0	2.92	0	2.92	16.1	16.1	0	2,4	2.61	0	2.64	0	2.18	14.41
Type* Analyst	O.	JD	Of	BR	BR	BR	BR	BR	BR	JD	Œ	ar	ЭD	JD	JD	OT.
Type*	220	AMB	ဘွဲ	AMB	သ	AMB	AC	AC	2	AMB	220	ည	AMB	ည	AMB	AC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance	(QC) Field Blank	(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational (AMS)	(QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	1	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018 (AC) Gym	Jun-07-2018 (AC) Gym	Jun-07-2018	Jun-08-2018	35254-21a Jun-07-2018 Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-09-2018 Jun-10-2018	35254-26a Jun-09-2018 Jun-10-2018
Date Collected	35254-11a Jun-05-2018 Jun-06-2018	35254-12a Jun-05-2018 Jun-06-2018	Jun-05-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	35254-17a Jun-06-2018	35254-18a Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018	Jun-08-2018		Jun-09-2018
Sample No	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a



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Comment											,							Steve / Top Level / PAPR	Dennis / 4th Level / PAPR
00	V	V	V	v	v	V	٧	v			٧		٧	٧		v	v	v	V
A/A	≥	≥	3	>	>	>	>	>			>		>	^		≯	3	>	₹
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22,93	22.29	0.00	0.00	8.28	0.00	21.66	13.38	0.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512.95	2497.72	0	0	545.49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	209	0	153	153	0	149	143	32	28
	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
Page 2	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (ipm)	2.1	2.35	15,46	15.23	15,46	15.23	15.23	15.23	0	0	2,61	0	16	16	0	15.25	15.25	2.6	2.6
Analyst	OC.	Q.	g	οί	Oť.	e E	OC	OC	O.	OC	JD	OC	JD.	ar	ar	OC	Or	А	Ωſ
Туре*	AMB	AMB	AC	AC	AC	AC	AC	AC	ЭÒ	ЭÒ	AMB	ЭÒ	AC	AC	ЭÒ	AC	AC	သဝ	220
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge		Jun-12-2018 (AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	Jun-15-2018 (OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018		Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	
Date Collected	Jun-10-2018	35254-28a Jun-10-2018	Jun-10-2018	35254-30a Jun-10-2018	35254-31a Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	35254-35a Jun-10-2018	Jun-10-2018	35254-37a Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	35254-42a Jun-15-2018	Jun-15-2018	Jun-15-2018	35254-45a Jun-15-2018
Sample No	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a



LAB# 202314

Sample No	Date Collected	Date Analysed	Area	Type*	Analyst	Avg. Flow Rate (Ipm)	Time On	Time	Time (Mins)	# Fibres	# Fields	Volume (L)	Density (flb/mm2)	Concen. (fib/mL)	^	n/vv L0Q	Comment
54-46a	35254-46a Jun-16-2018	Jun-17-2018	(AMB) MER Below Stack	AMB	Oſ	2.4	10:45	13:56	191	1.5	100	458,4	1.91	<0.01	3	٧	
54-47a	35254-47a Jun-16-2018	Jun-17-2018	(QC) Field Blank	ЭÒ	αr	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-48a	Jun-16-2018		Jun-17-2018 (AC) Wheelhouse	γC	JD	8	11:03	15:34	271	5.5	100	2168	7.01	<0.01	>	٧	
35254-49a	Jun-16-2018	Jun-17-2018	(AC) Wheelhouse	AC	ЭD	8	11:03	15:34	271	4.0	100	2168	5.10	<0.01	3	٧	
54-50a	35254-50a Jun-16-2018		Jun-17-2018 (QC) Field Blank	χ,	JD.	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
54-51a	35254-51a Jun-17-2018	Jun-18-2018	(AC) Cargo Hold 1	AC	BR	15.49	95:80	11:28	152	10.5	100	2354.48	13.38	<0.01	^	v	
54-52a	35254-52a Jun-17-2018		Jun-18-2018 (AC) Cargo Hold 1	AC	BR	15.49	98:56	11:28	152	5.5	100	2354.48	7.01	<0.01	>	>	
54-53a	35254-53a Jun-17-2018	Jun-18-2018	(AC) Winch Room 1	AC	BR	15.49	60:60	11:41	152	21.5	100	2354.48	27.39	<0.01	>	>	
54-54a	35254-54a Jun-17-2018	Jun-18-2018	(AC) Winch Room 2	AC	BR	15.49	60:60	11:41	152	18.0	100	2354.48	22.93	<0.01	>	>	
54-55a	35254-55a Jun-17-2018	Jun-18-2018	(QC) Field Blank 1	ည	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
54-56a	35254-56a Jun-17-2018	Jun-18-2018	(QC) Field Blank 2	ည	BR	0	00:00	00:00	0	2.5	100	0	3,18	<0.01			
35254-57a	Jun-19-2018	Jun-19-2018	(AMB) Mer Below Stack	AMB	BR	2.45	95:80	14:51	355	0.0	100	869.75	00.00	<0.01	≥	٧	
54-58a	35254-58a Jun-19-2018	Jun-19-2018	(QC) Field Blank	20	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
35254-59a	Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:13	12:57	164	0.5	100	2555.12	0.64	<0.01	8	>	
54-60a	35254-60a Jun-21-2018	Jun-21-2018	(AC) Stack	AC	BR	15.58	10:09	12:59	170	1.0	100	2648.6	1.27	<0.01	8	>	
54-61a	35254-61a Jun-21-2018	Jun-21-2018	(QC) Field Blank	ည	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
54-62a	35254-62a Jun-21-2018	Jun-21-2018	(QC) Field Blank	ည	BR	0	00:00	00:00	0	0.0	100	0	0.00	<0.01			
54-63a	35254-63a Jun-22-2018	Jun-22-2018 (OCC) MER	(OCC) MER	သ	BR	2.26	96:20	08:57	18	7.5	100	183.06	9.55	0.02	>	٧	
35254-64a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Port Alleyway	AMB	%	2,26	08:05	13:48	343	3,5	100	775.18	4.46	<0.01	≷	٧	
35254-65a	Jun-22-2018	Jun-22-2018	(AMB) U.D. Starboard Alleyway	AMB	BR	2.25	08:01	N/A	N/A	6.0	100	N/A	N/A	N/A			Pump failure
54-66a	35254-66a Jun-22-2018	Jun-22-2018	(QC) Field Blank	သ	BR	0	00:00	00:00	0	1.0	100	0	1.27	<0.01			
54-67a	35254-67a Jun-23-2018		Jun-25-2018 (AMB) Ambient 1	AMB	ac	2.5	08:45	13:42	297	2.5	100	742.5	3.18	<0.01	≯	٧	



LAB# 202314

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Comment					
Š	٧	V	. ∨	Ý	٧
% */>	3	3	3	>	>
	<0.01	<0.01	<0.01	<0.01	<0.01
Consity (Tip/mm/2)	6.37	1.27	3.18	10.19	7.01
Solume C)	742.5	655	662.5	612	612
* है	100	100	100	100	100
* Ě	5.0	1.0	2.5	8.0	5.5
S III	297	797	265	240	240
<u>į</u> ̃8	13:44	12:53	12:57	14:18	14:25
<u></u> £5	08:47	08:31	08:32	10:18	10:25
	2.5	2.5	2.5	2.55	2.55
Type* Analyst	Д	g.	J.C	BR	BR
Ě	AMB	AMB	AMB	AMB	AMB
Area	35254-68a Jun-23-2018 Jun-25-2018 (AMB) Ambient 2	35254-69a Jun-24-2018 Jun-25-2018 (AMB) Ambient 1	35254-70a Jun-24-2018 Jun-25-2018 (AMB) Ambient 2	35254-71a Jun-26-2018 Jun-27-2018 (AMB) Adj, 3rd Eng	35254-72a Jun-26-2018 Jun-27-2018 (AMB) Ambient 2
Date Analysed	Jun-25-2018	Jun-25-2018	Jun-25-2018	Jun-27-2018	Jun-27-2018
Collected	Jun-23-2018	Jun-24-2018	Jun-24-2018	Jun-26-2018	Jun-26-2018
Sample No	35254-68a	35254-69a	35254-70a	35254-71a	35254-72a

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room". Must not exceed 0.02 fibres per mi

AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance; collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL. - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this



LAB# 202314



Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1

Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 25, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Sample No	Location	Date Analysed	Analyst	Description	Phase	8	Asbestos	8	% Other Materials	8	Comments
35254-107b Stack Layer 1	Stack	Jun-25-2018	JD	Pipe Lagging	Pink	20	50 None Detected	0	Glass (5%) Non-Fibrous (95%)	100	
35254-107b Layer 2	Stack	Jun-25-2018 JD		Pipe Lagging	Grey	25	25 None Detected	0	Glass (30%) Non-Fibrous (70%)	100	
35254-107b Layer 3	Stack	Jun-25-2018 JD	Οť	Pipe Lagging	Pipe Wrap - White 25 None Detected	25	None Detected	0	0 Glass	100	



LAB# 202314



Bulk Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 21, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Sample No	Location	Date Analyst	Analyst	Description	Phase	8	Asbestos	*	% Other Materials	8	Comments
35254-99b	Boson Stores - Beneath Jun-21-2018 JD Perforated Metal Panels	Jun-21-2018		Deckhead/Bulkhead Insulation	Pink 1	100	100 None Detected	0	Glass	100	- Andrews - Andr
35254-100b	55254-100b Boson Stores - Beneath Jun-21-2018 JD Perforated Metal Panels	Jun-21-2018		Deckhead/Bulkhead Insulation	Yellow	100	100 None Detected	0	Glass	100	
35254-101b	35254-101b Boson Stores - Beneath Jun-21-2018 JD Perforated Metal Panels	Jun-21-2018		Deckhead/Bulkhead Insulation	Pink 1	100	100 None Detected	0	Glass	100	



LAB# 202314

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Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 25, 2018

Project number: 35254

Client Job or PO#: F1782-180965

Overloaded with Welding Dust Overloaded with Welding Dust Comment with Welding Overloaded Dust 8 ۸ ۸ Ϋ́ Ϋ́ v Density Concen. v/vv (fib/mm2) (fib/mL) ΑŅ N/A Ϋ́ ≷ ≷ ≷ ≷ > > <0.01 <0.01 <0.01 Α× Ž <0.01 <0.01 <0.01 Α× <0.01 N/ 2.55 5,73 8.92 5.10 3,18 0.00 Ν Ϋ́ 7.01 1950 818.26 0 Volume 949 130 1098,62 1082,32 1953,25 1956,96 1982,08 3 100 8 100 100 100 8 100 100 100 100 Telds * **Fibres** 5.5 7.0 2.0 4,5 4.0 2.5 0.0 占 5 ರ * Time (Mins) 604 809 292 251 337 332 9 601 8 0 18:20 18:29 18:36 00:00 13:33 13:34 18:07 18:12 14:31 18:42 14:31 13:51 00:00 07:56 08:02 08:16 를 8 08:07 08:11 08:21 13:44 Avg. Flow Rate (ipm) 3,24 3.26 3.25 3,26 3.26 3,26 3.25 3.25 3.25 0 Analyst 쫎 쫎 Ж æ Ж Ж Ж Ж 쫎 뽒 Type* AMB AMB AMB AMB AMB AMB AMB AMB AMB 8 35254-10a May-31-2018 Jun-01-2018 (QC) Field Blank May-31-2018 Jun-01-2018 (AMB) Aft Oilers 35254-4a | May-31-2018 | Jun-01-2018 | (AMB) Lounge 35254-9a | May-31-2018 | Jun-01-2018 | (AMB) AMS 3 (AMB) MCR 1 (AMB) AMS 1 May-31-2018 Jun-01-2018 (AMB) Bridge (AMB) MCR 2 May-31-2018 Jun-01-2018 (AMB) AMS 2 Į (AMB) Gym May-31-2018 Jun-01-2018 May-31-2018 Jun-01-2018 May-31-2018 Jun-01-2018 May-31-2018 Jun-01-2018 Date Analysed Date Collected 35254-1a 35254-5a 35254-3a 35254-2a 35254-6a 35254-7a 35254-8a Sample ĝ

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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		Γ-	Ι	Γ-	Ι	_	_	T	ļ	I	Τ	Ι	Γ-	!	т—	
Comment	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
1 00	٧	٧		٧		v	v	٧		V	v		V		V	\ \ \
v/w L0Q	3	>		>		>	>	>		>	3		≥		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	0.00	8.92	7.64	12.10	3.18	9.55	5.10	0.00	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12.5	1.0	13.0	0.0	7.0	6.0	9.5	2.5	7.5	4.0	0.0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	90:80	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (lpm)	2.61	2.61	0	2.92	0	2.92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Analyst	Œ	JD	ЭD	BR.	BR	BR	BR	BR	BR	OC	OC	e e	Ωſ	Or	g	JO.
Type*	220	AMB	ည	AMB	ည	AMB	AC	AC	οc	AMB	2200	သ	АМВ	ЭÒ	AMB	AC
Area	Jun-06-2018 (Gym) (Gym)	(AMB) Cargo Hold Adj. Gym Entrance		(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	35254-21a Jun-07-2018 Jun-08-2018 (AMS)	35254-22a Jun-07-2018 Jun-08-2018 (QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018 (AC) Gym	Jun-07-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	35254-11a Jun-05-2018	Jun-05-2018	Jun-05-2018	Jun-06-2018	Jun-06-2018	Jun-06-2018	35254-17a Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	35254-23a Jun-08-2018	35254-24a Jun-08-2018	35254-25a Jun-09-2018	35254-26a Jun-09-2018
Sample	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a



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Comment																		Steve / Top Level / PAPR	Dennis / 4th Level / PAPR
r06	V	٧	~	V	٧	٧	~	٧			v		٧	٧		v	٧	٧	٧
w/w	≥	3	≥	≥	>	>	>	>			>		>	^		Λ	3	>	3
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0,01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22.93	22.29	00.0	00.00	8.28	00.00	21.66	13.38	00.00	5.73	5.10	12.10	3.18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512,95	2497.72	0	0	545,49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	509	0	153	153	0	149	143	32	28
Time Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
Time On	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (lpm)	2.1	2,35	15.46	15,23	15.46	15.23	15.23	15.23	0	0	2.61	0	16	16	0	15.25	15,25	2.6	2.6
Analyst	QΓ	Ð	Q.	Ωſ	ar	ar	Qſ	JD	ar	αſ	Ωſ	Or	ac	Оſ	ar	ar	JD	JD.	JD
Type*	AMB	AMB	AC	AC	AC	AC	AC	AC	ည	သ	AMB	ည	AC	AC	ည	AC	AC	200	220
Area	(AMB) Poop Deck - Alleyway Adj. Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge		(AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	Jun-15-2018 (AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	(OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Date Collected	35254-27a Jun-10-2018	35254-28a Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	35254-35a Jun-10-2018	35254-36a Jun-10-2018	Jun-12-2018	Jun-12-2018	35254-39a Jun-12-2018	35254-40a Jun-12-2018	35254-41a Jun-12-2018	35254-42a Jun-15-2018	35254-43a Jun-15-2018	Jun-15-2018	35254-45a Jun-15-2018
Sample	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a



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Comment																				Pump failure		
100	٧		v	v		v	٧	v	v			٧		v	v			٧	٧			~
w/v	₹		>	3		>	>	>	>			≥		₹	₹			>	3			>
Concen. (fib/mL)	<0.01	. <0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	1.91	0.00	7.01	5.10	1.27	13.38	7.01	27.39	22.93	1.27	3.18	00.00	0.00	0.64	1.27	1.27	00.00	9.55	4.46	N/A	1.27	3.18
Volume (L)	458.4	0	2168	2168	0	2354.48	2354.48	2354.48	2354.48	0	0	869.75	0	2555.12	2648.6	0	0	183.06	775.18	N/A	0	742.5
# Helds	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.5	0.0	5.5	4.0	1.0	10.5	5.5	21.5	18.0	1.0	2.5	0.0	0.0	0.5	1.0	1.0	0.0	7.5	3.5	6.0	1.0	2.5
Time (Mins)	191	0	271	271	0	152	152	152	152	0	٥	355	0	164	170	0	0	81	343	N/A	0	297
Time	13:56	00:00	15:34	15:34	00:00	11:28	11:28	11:41	11:41	00:00	00:00	14:51	00:00	12:57	12:59	00:00	00:00	08:57	13:48	N/A	00:00	13:42
Time	10:45	00:00	11:03	11:03	00:00	95:80	95:80	60:60	60:60	00:00	00:00	98:56	00:00	10:13	10:09	00:00	00:00	07:36	08:05	08:01	00:00	08:45
Avg. Flow Rate (ipm)	2.4	0	8	8	0	15.49	15.49	15.49	15.49	0	0	2.45	0	15.58	15.58	0	0	2.26	2.26	2.25	0	2.5
Analyst	Oſ	JD	JD	JD	JD	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR.	BR	BR	JD
Type*	AMB	ЭÒ	AC	AC	ည	AC	AC	УC	УC	20	ЭÒ	АМВ	ЭÒ	AC	AC	ЭÒ	ЭĊ	220	AMB	AMB	ο̈́c	AMB
Area	(AMB) MER Below Stack	(QC) Field Blank	(AC) Wheelhouse	(AC) Wheelhouse	(QC) Field Blank	(AC) Cargo Hold 1	(AC) Cargo Hold 1	(AC) Winch Room 1	(AC) Winch Room 2	(QC) Field Blank 1	(QC) Field Blank 2	(AMB) Mer Below Stack	(QC) Field Blank	(AC) Stack	(AC) Stack	(QC) Field Blank	(QC) Field Blank	(OCC) MER	(AMB) U.D. Port Alleyway	(AMB) U.D. Starboard Alleyway	(QC) Field Blank	(AMB) Ambient 1
Date	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018		Jun-18-2018		Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018	Jun-21-2018			Jun-22-2018	Jun-22-2018	Jun-22-2018	Jun-22-2018	
Date Collected	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-16-2018	35254-50a Jun-16-2018	35254-51a Jun-17-2018 Jun-18-2018	35254-52a Jun-17-2018	35254-53a Jun-17-2018 Jun-18-2018	Jun-17-2018	Jun-17-2018	35254-56a Jun-17-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018 Jun-21-2018	35254-60a Jun-21-2018	35254-61a Jun-21-2018 Jun-21-2018	35254-62a Jun-21-2018 Jun-21-2018	Jun-22-2018	Jun-22-2018	35254-65a Jun-22-2018	35254-66a Jun-22-2018	35254-67a Jun-23-2018 Jun-25-2018
Sample No	35254-46a	35254-47a	35254-48a	35254-49a	35254-50a	35254-51a	35254-52a	35254-53a	35254-54a	35254-55a	35254-56a	35254-57a	35254-58a	35254-59a	35254-60a	35254-61a	35254-62a	35254-63a	35254-64a	35254-65a	35254-66a	35254-67a



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	Date	Date	Area	Type*	Analyst	Avg.	Time	Time	Time	*	*	Volume	Density	Concen.	%/x	007	Comment
2	Collected	Analysis S					δ	ŧ	ê E	g E	ŝ	3	2 mm (mm)	a		·	
	un-23-2018	Jun-25-2018	35254-68a Jun-23-2018 Jun-25-2018 (AMB) Ambient 2	AMB	R	2.5	08:47	13:44	297	5.0	100	742.5	6.37	<0.01	≩	٧	
a	un-24-2018	Jun-25-2018	35254-69a Jun-24-2018 Jun-25-2018 (AMB) Ambient 1	AMB	Q	2.5	08:31	12:53	262	1.0	100	655	1.27	<0.01	≩	٧	
-C	un-24-2018	Jun-25-2018	35254-70a Jun-24-2018 Jun-25-2018 (AMB) Ambient 2	AMB	20	2.5	08:32	12:57	265	2.5	100	662.5	3.18	<0.01	≷	·v	

*Legend and Explanation of Terms

CR - clean room: sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room", Must not exceed 0.02 fibres per ml

AMB - ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC – occupational: sample collected on a worker within the work area, Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per ml.

QC - quality control: Blank field testing for quality assurance.

OL. - overloaded: This is when the air sample is so overloaded that it is unreadable.

W - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5,57 which requires development of an exposure control plan (ECP) following Regulation 5,57 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5,57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)



As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this

regulation.

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LAB# 202314



Air Sample Report

201 - 415 Gorge Road East Victoria, BC V8T 2W1 Tel: (250) 384-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Analysed in accordance with NIOSH 7400 fibre counting method

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - General Hazmat Consulting

Date: June 25, 2018

Client Job or PO#: F1782-180965

Project number: 35254

Comment	Overloaded with Welding Dust	Overloaded with Welding Dust						Overloaded with Welding Dust		
001	N/A	N/A	>	>	>	>	٧	N/A	>	
^	N/A	N/A	W	^	W	^	>	N/A	W	
Concen. (fib/mL)	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	N/A	N/A	2.55	7.01	5.73	8.92	5.10	N/A	3,18	0.00
Volume (L)	1098.62	1082,32	1950	1953.25	1956.96	1982.08	646	130	818.26	0
# Fields	100	100	100	100	100	100	100	100	100	100
# Fibres	OL	70	2.0	5.5	4.5	7.0	4.0	OL	2.5	0.0
Time (Mins)	337	332	900	601	604	809	767	40	251	0
Time Off	13:33	13:34	18:07	18:12	18:20	18:29	18:36	14:31	18:42	00:00
Time On	07:56	08:05	08:07	08:11	08:16	08:21	13:44	13:51	14:31	00:00
Avg. Flow Rate (ipm)	3.26	3.26	3.25	3.25	3.24	3.26	3,25	3.25	3,26	0
Analyst	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR
Type*	АМВ	АМВ	AMB	AMB	AMB	AMB	AMB	АМВ	AMB	ჯ
Area	(AMB) MCR 1	(AMB) AMS 1	35254-3a May-31-2018 Jun-01-2018 (AMB) Aft Oilers Cabin	35254-4a May-31-2018 Jun-01-2018 (AMB) Lounge	(AMB) Bridge	(AMB) Gym	(AMB) MCR 2	(AMB) AMS 2	(AMB) AMS 3	35254-10a May-31-2018 Jun-01-2018 (QC) Field Blank
Date Analysed	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018	Jun-01-2018
Date Collected	35254-1a May-31-2018 Jun-01-2018 (AMB) MCR 1	35254-2a May-31-2018 Jun-01-2018 (AMB) AMS	May-31-2018	May-31-2018	Мау-31-2018 Jun-01-2018 (АМВ) Bridge	May-31-2018 Jun-01-2018 (AMB) Gym	May-31-2018 Jun-01-2018 (AMB) MCR 2	35254-8a May-31-2018 Jun-01-2018 (AMB) AMS 2	Мау-31-2018 Jun-01-2018 (АМВ) АМS 3	May-31-2018
Sample No	35254-1a	35254-2a	35254-3a	35254-4a	35254-5a	35254-6a	35254-7a	35254-8a	35254-9a	35254-10a

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



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Comment	Julio Ruiz / Tyvek, PAPR, Gloves, Boots / Vacuuming Surfaces										Miles / Tyvek, PAPR / Vacuuming, Brushing, and Wiping Surfaces					
LOQ	٧	٧		٧		٧	٧	v		٧	٧		٧		٧	v
v/vv L0Q	N	>		>		>	>	>		>	>		3		>	>
Concen. (fib/mL)	<0.01	0.023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Density (fib/mm2)	5.73	15.92	1.27	16.56	0.00	8,92	7.64	12.10	3.18	9.55	5.10	0.00	6.37	1.91	7.01	15.29
Volume (L)	62.64	263.61	0	1798.72	0	578.16	2270.1	2270.1	0	962.4	133.11	0	942.48	0	769.54	2305.6
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	4.5	12,5	1.0	13.0	0.0	7.0	0.9	9.5	2.5	7.5	4.0	0.0	5.0	1.5	5.5	12.0
Time (Mins)	24	101	0	616	0	198	141	141	0	401	51	0	357	0	353	160
Time	13:06	14:23	00:00	18:22	00:00	18:44	20:51	20:51	00:00	16:04	15:26	00:00	15:01	00:00	16:50	18:20
Time On	12:42	12:42	00:00	08:06	00:00	15:26	18:30	18:30	00:00	09:23	14:35	00:00	09:04	00:00	10:57	15:40
Avg. Flow Rate (ipm)	2.61	2.61	0	2.92	0	2,92	16.1	16.1	0	2.4	2.61	0	2.64	0	2.18	14.41
Type* Analyst	Οί	JD	JD	BR	BR	BR	BR	BR	BR	JD	O(.	ac	JD	JD	DC DC	Of.
Type*	220	AMB	သ	AMB	သု	АМВ	AC	AC	ъò	AMB	220	ЭÒ	AMB	ЭÒ	АМВ	AC
Area	(OCC) Occupational (Gym)	(AMB) Cargo Hold Adj. Gym Entrance		(AMB) Cargo Hold Adj. Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entry	(AC) Gym	(AC) Gym	(QC) Field Blank	(AMB) MER Adj. AMS Entryway	(OCC) Occupational (AMS)	(QC) Field Blankl	(AMB) Poop Deck Port Alleyway	(QC) Field Blank	(AMB) Main Crew Deck	(AC) 3rd Officer Cabin
Date Analysed	Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-07-2018	Jun-08-2018		Jun-08-2018	Jun-08-2018	Jun-08-2018	Jun-10-2018	Jun-10-2018
Date Collected	35254-11a Jun-05-2018	35254-12a Jun-05-2018	35254-13a Jun-05-2018	35254-14a Jun-06-2018	Jun-06-2018	Jun-06-2018	35254-17a Jun-06-2018	Jun-06-2018	Jun-06-2018	Jun-07-2018	35254-21a Jun-07-2018 Jun-08-2018	35254-22a Jun-07-2018	35254-23a Jun-08-2018	35254-24a Jun-08-2018	Jun-09-2018	35254-26a Jun-09-2018
Sample	35254-11a	35254-12a	35254-13a	35254-14a	35254-15a	35254-16a	35254-17a	35254-18a	35254-19a	35254-20a	35254-21a	35254-22a	35254-23a	35254-24a	35254-25a	35254-26a



LAB# 202314

2/2

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Comment								:										Steve / Top Level / PAPR	Dennis / 4th Level / PAPR
700	V	٧	V	V	V	V	v	٧			٧		٧	٧		v	v	٧	٧
na/a	≥	>	≥	≥	>	>	>	>			>		>	>		^	3	>	3
Concen. (fib/mL)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.056	<0.01
Density (fib/mm2)	3.82	5.10	3.82	5.10	15.92	17.20	22,93	22.29	00.00	0.00	8,28	0.00	21.66	13.38	0.00	5.73	5.10	12.10	3,18
Volume (L)	657.3	733.2	2612.74	2558.64	2597.28	2543.41	2512.95	2497.72	0	0	545,49	0	2448	2448	0	2272.25	2180.75	83.2	72.8
# Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	3.0	4.0	3.0	4.0	12.5	13.5	18.0	17.5	0.0	0.0	6.5	0.0	17.0	10.5	0.0	4.5	4.0	9.5	2.5
Time (Mins)	313	312	169	168	168	167	165	164	0	0	209	0	153	153	0	149	143	32	28
Time Off	17:06	17:06	19:02	19:02	19:12	19:12	19:21	19:21	00:00	00:00	16:49	00:00	16:31	16:31	00:00	12:53	12:57	15:12	15:15
o o	11:53	11:54	16:13	16:14	16:24	16:25	16:36	16:37	00:00	00:00	13:20	00:00	13:58	13:58	00:00	10:24	10:34	14:40	14:47
Avg. Flow Rate (Ipm)	2.1	2.35	15.46	15.23	15.46	15.23	15.23	15.23	0	0	2.61	0	16	16	0	15,25	15.25	2.6	2.6
Analyst	OC	30	Ωſ	OC	Ωſ	ΩC	ЭD	Ω	ar	Qſ	QC	ac	ac	ar	Qί	at	JD	ΩC	Ð
Type*	АМВ	AMB	AC	AC	AC	AC	AC AC	AC	ос ОС	ည	AMB	о́с	AC	AC	о́с	AC	AC	220	220
Area	(AMB) Poop Deck - Alleyway Adj, Hospita	(AMB) Poop Deck - Alleyway Adj. Two Oilers	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - 3rd Officer Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Sr. Eng. Cabin	(AC) Poop Deck - Aft Oil Cabin	(AC) Poop Deck - Aft Oil Cabin	(QC) Field Blank	(QC) Field Blank	(AMB) Alley Adj. Lounge	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(QC) Field Blank	(AC) Air Clearance	(AC) Air Clearance	(OCC) Occupational	(OCC) Occupational
Date Analysed	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-11-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018	Jun-15-2018
Date Collected	35254-27a Jun-10-2018	35254-28a Jun-10-2018 Jun-11-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-10-2018	Jun-12-2018	Jun-12-2018	Jun-12-2018	35254-40a Jun-12-2018	35254-41a Jun-12-2018	35254-42a Jun-15-2018 Jun-15-2018	Jun-15-2018	Jun-15-2018	35254-45a Jun-15-2018
Sample No	35254-27a	35254-28a	35254-29a	35254-30a	35254-31a	35254-32a	35254-33a	35254-34a	35254-35a	35254-36a	35254-37a	35254-38a	35254-39a	35254-40a	35254-41a	35254-42a	35254-43a	35254-44a	35254-45a



LAB# 202314

	<u> </u>																		r			
Comment																				Pump failure		
L00	v		>	>		٧.	v	٧	٧			·		٧	٧			٧	٧			>
٧/٨	^		^	Λ		>	^	>	>			>		W	W			>	3			^
Concen. (flb/mL)	<0.01	<0,01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	N/A	<0.01	<0.01
Density (fib/mm2)	1.91	00'0	7.01	5.10	1.27	13,38	7.01	27.39	22.93	1.27	3.18	0.00	0.00	0.64	1.27	1.27	00.00	9,55	4,46	N/A	1.27	3.18
Volume (L)	458.4	0	2168	2168	0	2354,48	2354.48	2354.48	2354.48	0	0	869.75	0	2555.12	2648.6	0	0	183.06	775,18	N/A	0	742.5
Fields	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
# Fibres	1.5	0.0	5.5	4.0	1.0	10.5	5.5	21.5	18.0	1.0	2.5	0.0	0.0	0.5	1.0	1.0	0.0	7.5	3.5	0'9	1.0	2,5
Time (Mins)	191	0	271	271	0	152	152	152	152	0	0	355	0	164	170	0	0	81	343	N/A	0	297
Time Off	13:56	00:00	15:34	15:34	00:00	11:28	11:28	11:41	11:41	00:00	00:00	14:51	00:00	12:57	12:59	00:00	00:00	08:57	13:48	N/A	00:00	13:42
Time On	10:45	00:00	11:03	11:03	00:00	92:80	95:80	60:60	60:60	00:00	00:00	08:56	00:00	10:13	10:09	00:00	00:00	07:36	08:05	08:01	00:00	08:45
Avg. Flow Rate (lpm)	2.4	0	80	8	0	15.49	15.49	15.49	15.49	0	0	2.45	0	15,58	15,58	0	0	5.26	2.26	2,25	0	2,5
Analyst	OC	OC OC	Ωſ	JD	JD	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	JD
Type*	АМВ	8	AC	AC AC	ည	AC	AC	AC	AC	8	ς,	AMB	သု	AC	AC	သ	ည	သ	АМВ	AMB	ЭÒ	AMB
Area	(AMB) MER Below Stack	(QC) Field Blank	(AC) Wheelhouse	(AC) Wheelhouse	(QC) Field Blank	(AC) Cargo Hold 1	(AC) Cargo Hold 1	(AC) Winch Room 1	(AC) Winch Room 2	(QC) Field Blank 1	(QC) Field Blank 2	(AMB) Mer Below Stack	(QC) Field Blank	(AC) Stack	(AC) Stack	(QC) Field Blank	(QC) Field Blank	(OCC) MER		(AMB) U.D. Starboard Alleyway	(QC) Field Blank	35254-67a Jun-23-2018 Jun-25-2018 (AMB) Ambient 1
Date Analysed	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-18-2018	35254-52a Jun-17-2018 Jun-18-2018	35254-53a Jun-17-2018 Jun-18-2018	35254-54a Jun-17-2018 Jun-18-2018	Jun-18-2018	Jun-18-2018	Jun-19-2018	Jun-19-2018	35254-59a Jun-21-2018 Jun-21-2018 (AC) Stack	Jun-21-2018	Jun-21-2018	Jun-21-2018	Jun-22-2018	Jun-22-2018	Jun-22-2018	Jun-22-2018	Jun-25-2018
Date Collected	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-16-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	Jun-17-2018	35254-55a Jun-17-2018	Jun-17-2018	Jun-19-2018	Jun-19-2018	Jun-21-2018	35254-60a Jun-21-2018	Jun-21-2018	Jun-21-2018	Jun-22-2018	Jun-22-2018	Jun-22-2018	Jun-22-2018	Jun-23-2018
Sample	35254-46a	35254-47a	35254-48a	35254-49a	35254-50a	35254-51a	35254-52a	35254-53a	35254-54a	35254-55a	35254-56a	35254-57a	35254-58a	35254-59a	35254-60a	35254-61a	35254-62a	35254-63a	35254-64a	35254-65a	35254-66a	35254-67a



LAB# 202314

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Sample No	Date Collected	Date Analysed	Area	Ė	Analyst	Avg. Flow Rate (pm)	<u></u> \$	≜å	≝ Ε ξ	* å	# \$	S C	Density (flb/mm2)		001 A/A	Š	Comme
35254-68a	Jun-23-2018	Jun-25-2018	35254-68a Jun-23-2018 Jun-25-2018 (AMB) Ambient 2	AMB	A	2.5	08:47	13:44	297	5.0	100	742.5	6.37	<0.01	⋛	V	
35254-69a	Jun-24-2018	Jun-25-2018	35254-69a Jun-24-2018 Jun-25-2018 (AMB) Ambient 1	AMB	GC GC	2.5	08:31	12:53	797	1.0	100	655	1.27	<0.01	≷	٧	
35254-70a	Jun-24-2018	Jun-25-2018	35254-70a Jun-24-2018 Jun-25-2018 (AMB) Ambient 2	AMB	A	2.5	08:32	12:57	265	2.5	100	662.5	3,18	Ť	<0.01 VV	٧	

*Legend and Explanation of Terms

CR - clean room; sample collected in the first room of the 3-stage decontamination chamber for high risk work also known as "the clean room", Must not exceed 0.02 fibres per mi

AMB – ambient: sample collected in an occupied space adjacent to the work area. Must not exceed 0.1 fibres per ml

OCC -- occupational: sample collected on a worker within the work area. Must not exceed (0.1 fibres per ml x the protection factor of respirator in use by the worker)

AC - air clearance: collected once the work is complete and surfaces are sprayed with a sealant. Must not exceed 0.02 fibres per mi.

QC - quality control: Blank field testing for quality assurance.

OL - overloaded: This is when the air sample is so overloaded that it is unreadable.

VV - Reading is less than the Limit of Detection (LOD) of the method (7 fibers/mm2)

V - Reading is lower or higher than the Limit of Quantitation (LOQ) of the method (100-1300 fibers/mm2)

Permissible Exposure Limit (PEL) (Asbestos - All forms): 0.1 fibres/mL (unprotected persons)



Yellow indicates the result exceeded the WorkSafeBC Action Level (50% of the PEL)

Asbestos is a Designated Substance as per BC OHS Regulation 5.57 which requires development of an exposure control plan (ECP) following Regulation 5.54 to keep levels as low as reasonably achievable (ALARA) as outlined in Regulation 5.57(2). Levels approaching or exceeding 50% of the applicable PEL should trigger a review of procedures and protocols used on site to ensure that worker's exposure to airborne asbestos are being kept as low as practicable.



Red indicates the result exceeded either the WorkSafeBC PEL or the air clearance limit (for blanks, indicates possible media contamination)

As per WSBC Regulation 6.12 (3), all air samples taken during high risk work activities must be made available to the workers involved within 24 hours of sample collection. NWest recommends that sample results are posted on site daily, to facilitate compliance with this regulation.



Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Senior Engineer

Sent: June-29-18 6:53 AM

To: CCGS-NGCC, Bartlett Chief Engineer; Chaikin Gabriel

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Logistics Officer; CCGS-NGCC,

Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer

Subject: RE: Bartlett HVAC Trunking - Contaminated with ACM

I fully support the suggestion of Chief Ross, this is not just dust above the deckhead panels but rather ACM dust in the HVAC and accommodation ventilation duct.

Regards

Assamoi Assi

Senior Engineer, CCGS Bartlett

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: June-29-18 6:33 AM

To: Chaikin Gabriel

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Logistics Officer; CCGS-

NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer **Subject:** RE: Bartlett HVAC Trunking - Contaminated with ACM

Importance: High

Gabe,

With 5 out of 7 duct swipes being positive for moderate levels of ACM dust, it would be a mistake to assume that the remainder of the untested ducting is good.

I suggest that the entire ducting be cleaned.

Regards

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: June-28-18 10:00 PM

To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Captain

Subject: Fw: Bartlett Air Trunking

Chief, Captain;

This is a surprise but it is good we found it now. I'm glad that Scott arranged the additional wipe samples.

I will inform Superior, PSPC & CME. I believe we should proceed with the cleaning of the affected areas first. We will retest the bridge, especially, once George Koherst has completed his work in the consoles. We should as a team discuss any additional ducting testing before we limit the boundaries of the cleaning to these known areas.

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From:

Sent: Thursday, June 28, 2018 20:51

To: Chaikin, Gabriel

Cc: CCGS-NGCC, Bartlett Chief Engineer;

Subject: RE: Bartlett Air Trunking

Good evening, please find attached the results of wipes samples collected in HVAC ducts and post-cleaning in the Stack last week. Summary as follows.

Ducts

Expected Ambient range

- Upper Deck Cabin U-38 Supplemental Heating Duct (chrysotile)
- Upper Deck 3rd Officer's Cabin Supplemental Heating Duct (chrysotile, amosite)

Moderate range

- Boat Deck Fan Room (amosite, chrysotile)
- Poop Deck, Alley Adjacent Galley, Recirc Duct (chrysotile)

Elevated

Wheelhouse (chrysotile, amosite)

Stack (clearance wipes) - all expected ambient levels. Asbestos types detected were chrysotile and tremolite.

Recommendations:

- Have a qualified abatement contractor clean the HVAC system, or a qualified duct cleaner that is trained and experienced cleaning asbestos-contaminated HVAC systems.
- Redo surface wipes samples following cleaning.
- Conduct ambient air testing with HVAC running after the system has been cleaned, inspected, and tested.
- Apply an approved encapsulated to surfaces within the Stack. Additional cleaning is not warranted at this time.
 Follow asbestos procedures when conducting maintenance work in this space.

Note: ambient air testing during while the vessel was at sea did not show an air quality issue with regard to airborne asbestos.

Let me know if you have any questions. I'll be available from 10:30 am tomorrow.

Best,

Project Manager

North West Envronmental Group Ltd.

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Office: 250-384-9695 ext

201 – 415 Gorge Road East Victoria, BC V8T 2W1

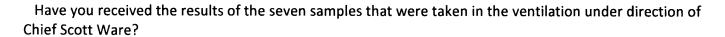
From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: June 28, 2018 2:09 PM

To:

Cc: CCGS-NGCC, Bartlett Chief Engineer < BartlettCE@ccgs-ngcc.gc.ca>

Subject: Bartlett Air Trunking



Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

s.16(2)

s.19(1)

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CCGS-NGCC, Bartlett Chief Officer

s.21(1)(b)

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

July-01-18 4:14 PM

To:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room

Cc:

CCGS-NGCC, Bartlett Chief Officer

Subject:

FW: SAFETY - PJSAs

Importance:

High

Assamoi, Gord, Tom & Kyle

Technically, this watertight door cement issue was a "near miss" and not a "spill" per se, because there was not any airbourne asbestos measured (and fortunately we were taking an air sample at the time).

The Incident Investigation is still in the process of being conducted, and the IIR not yet completed, but some of the most important lessons include:

- 1. Consider the ACM implications (and all other hazards) in every job we do.
- 2. Consult the most current Asbestos Inventory for every job that we do.
- 3. Perform a PJSA for any work for which there is not an ISM procedure for, particular contractor work. And log this in the Chief Engineer's Log (especially if we do not actually complete the paperwork). One point recently discussed, was that at least one hazard must be identified before proceeding with the job, (otherwise we're not thinking hard enough).
- 4. We (C/E, S/E, and QA) must know exactly what the contractors are doing at all times. Not just which job they are working on, but which element of that job. If it is not in the spec then we must know if there is an approved WER for the work. And we must be conscious to the greatest extent possible of any safety hazards that have gone unrecognized.

Your hightened interest in maximizing safety in this refit and in the discharge of normal shipboard operations would be appreciated.

Thanks,

Ross McKenzie Chief Engineer, CCGS Bartlett Cell:

Cell.

<u>BartlettCE@bar.ccgs-ngcc.gc.ca</u> <u>BartlettChief@gmail.com</u> for files above 5 MB

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: June-30-18 4:32 PM

To:	Ch:	aikin	Ca	hrial
1 ():	l lle	11K II I	เรส	1 3F 1 () 1

Cc: CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior Engineer

Subject: RE: ACM on ship as per Environmental Assessment

Importance: High

Gabe,

1.	I have consulted with the Captain and Marine Superintendent on this issue (Capt M. Shuckburg), and we are proceeding in a responsible manner.
2.	

3.
4.

Regards, s.19(1)

Ross McKenzie

Chief Engineer, CCGS Bartlett s.21(1)(b)

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

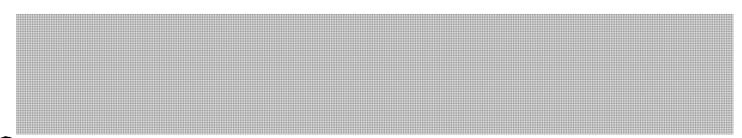
Sent: June-30-18 2:17 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: Re: ACM on ship as per Environmental Assessment

Ross,

On Friday morning at our WER meeting and I talked this out. came in also and I had him relay the event. From all of our perspective there is low possibility of exposure. That doesn't mean there isn't a chance.



Regards,

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.

From: CCGS-NGCC, Bartlett Chief Engineer **Sent:** Saturday, June 30, 2018 09:47

To:

Cc: Chaikin, Gabriel; CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Senior

Engineer

Subject: RE: ACM on ship as per Environmental Assessment

Good Day

It is regrettable that this incident transpired. We are conducting our own Incident Investigation regarding this matter, and shall likely be consulting with you & your staff in the process of completing our investigation, after which we will be in a better position to directly reply to your questions to your full satisfaction.

Respectfully,

Ross McKenzie Chief Engineer, CCGS Bartlett Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: June-29-18 10:52 AM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: ACM on ship as per Environmental Assessment

Ross,

It has come to my attention that a material containing ACM was disturbed while servicing on the water tight doors. I realize the environmental assessment has been forwarded to me and I have made a copy available to my crew. As I have to do a safety investigation about this incident the one glaring thing that has come to my attention is that in contravention with WorksafeBC regulations as follows:

6.13 Designated area

- (1) Before starting work with asbestos-containing material, the employer must, with due regard for the level of risk,
- (a) identify and mark the boundary of the designated work area by barricades, fences, or similar means,
- (b) ensure that the immediate work area is cleared of objects, materials and equipment other than that required to do the work, and
- ensure that windows, doorways and all other openings are adequately secured to prevent the release of asbestos fibre into other work areas.

- (2) The employer must post signs at the boundaries of the designated work area indicating asbestos work is in progress, the hazards, and the precautions required for entering the work area.
- The employer must restrict entry into the designated work area to authorized persons who are adequately protected against the level of risk within the designated work area.

In light of that, my question to you is, who is ultimately responsible during the refit period or otherwise to ensure the safety of the crew and subcontractors by providing the necessary engineering controls, (IE – signage, PPE, training etc), for the ship?

Regards,

Project Manager,

Quality Control, Occupational Health and Safety Ultrasonic Testing Representative



Canadian Maritime Engineering Ltd. West Coast Division

854 Devonshire Rd. Victoria, BC, V9A 4T4

_ Cell:

Phone: (250) 475-3553 Fax: (250) 590-0972

Email:

Website: www.cmelimited.com

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: July-02-18 9:01 AM

To: CCGS-NGCC, Bartlett Logistics Officer CCGS-NGCC, Bartlett Senior Engineer

Subject: FW: Bartlett Air Trunking **Attachments:** 35254 duct wipes.pdf

FYI. Historical.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: June-28-18 8:52 PM

To: Chaikin Gabriel

Cc: CCGS-NGCC, Bartlett Chief Engineer;

Subject: RE: Bartlett Air Trunking

Good evening, please find attached the results of wipes samples collected in HVAC ducts and post-cleaning in the Stack last week. Summary as follows.

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Expected Ambient range

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Moderate range

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- Poop Deck, Alley Adjacent Galley, Recirc Duct (chrysotile)

Elevated

• Wheelhouse (chrysotile, amosite)

Stack (clearance wipes) - all expected ambient levels. Asbestos types detected were chrysotile and tremolite.

Recommendations:

- Have a qualified abatement contractor clean the HVAC system, or a qualified duct cleaner that is trained and experienced cleaning asbestos-contaminated HVAC systems.
- Redo surface wipes samples following cleaning.
- Conduct ambient air testing with HVAC running after the system has been cleaned, inspected, and tested.
- Apply an approved encapsulated to surfaces within the Stack. Additional cleaning is not warranted at this time. Follow asbestos procedures when conducting maintenance work in this space.

Note: ambient air testing during while the vessel was at sea did not show an air quality issue with regard to airborne asbestos.

Let me know if you have any questions. I'll be available from 10:30 am tomorrow.

Best,

Project Manager North West Envronmental Group Ltd.

Cell:

Office: 250-384-9695 ext

201 - 415 Gorge Road East Victoria, BC V8T 2W1

From: Chaikin, Gabriel [mailto:Gabriel.Chaikin@dfo-mpo.gc.ca]

Sent: June 28, 2018 2:09 PM

To:

Cc: CCGS-NGCC, Bartlett Chief Engineer < BartlettCE@ccgs-ngcc.gc.ca>

Subject: Bartlett Air Trunking

Have you received the results of the seven samples that were taken in the ventilation under direction of Chief Scott Ware?

Regards

Gabe

Sent from my BlackBerry 10 smartphone on the Bell network.



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Rev #2, 6/28/2018

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541814 Location: Upper D: Laundry Room-HVAC Duct Concentration (s/cm²): <3700 Client No.: 35254-91b Area (cm²): 100 Asbestos Type(s): None Detected

Density (s/mm²): <7.69

Lab No.:6541815 Location: Boat D: Fan Room-HVAC Duct

Client No.: 35254-92b Density (s/mm²): 15.4

Concentration (s/cm²): 14800 Area (cm²): 100 Asbestos Type(s): Amosite Chrysotile

Location: Wheelhouse-HVAC Duct Lab No.:6541816

Client No.: 35254-93b Area (cm²): 100 Density (s/mm²): 115 Concentration (s/cm²): 55500 Asbestos Type(s): Chrysotile Amosite

Lab No.:6541817 Location: Poop D: Alley Adjacent Galley-Main Concentration (s/cm²): 29600 Client No.: 35254-94b

Recirc Duct Area (cm²): 100 Asbestos Type(s): Chrysotile

Concentration (s/cm²): 3700

Asbestos Type(s): Chrysotile

Density (s/mm²): 30.8

Lab No.:6541818 Location: Upper D: Cabin U-38 Supplemental

Client No.: 35254-95b **Heating Duct** Area (cm²): 100

Density (s/mm²): 7.69

Location: Upper D: 3rd Officer-Supplemental Concentration (s/cm²): 3700

Area (cm²): 100 Density (s/mm²): 15.4

Heating Duct Asbestos Type(s): Amosite Chrysotile

Location: Boat D: Chief Officer-Supplemental Concentration (s/cm²): <3700 **Heating Duct** Asbestos Type(s): None Detected

Area (cm2): 100

Density (s/mm²): <7.69

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

Lab No.:6541819

Lab No.:6541820

Client No.: 35254-97b

Client No.: 35254-96b

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

Dated: 6/28/2018 6:30:55

Page 1 of 4



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: Report No.:

6/27/2018 566679 - TEM Dust

Rev #2, 6/28/2018

201 - 415 Gorge Road East

Project:

Wipe **CCGS Bartlett-General Hazmat Consulting**

Victoria BC V8T 2W1

Project No.: 35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS SUMMARY

Lab No.:6541821 Location: Field Blank Client No.: 35254-98b Area (cm²): 100

Concentration (s/cm²): <185

Asbestos Type(s): None Detected

Lab No.:6541822

Location: Stack-Stbd Air Supply Plenum

Concentration (s/cm²): 6660

Area (cm²): 100 Density (s/mm²): 692

Density (s/mm²): <19.2

Asbestos Type(s): Chrysotile

Lab No.:6541823 Client No.: 35254-103b

Client No.: 35254-102b

Location: Stack-Main Engine Water Jacket Tank Concentration (s/cm²): <617

Area (cm²): 100 Density (s/mm²): <19.2 Asbestos Type(s): None Detected

Lab No.:6541824 Client No.: 35254-104b Location: Stack-Exhaust Pipe Support Strut

Concentration (s/cm²): 6940 Asbestos Type(s): Chrysotile

Area (cm2): 100

Density (s/mm²): 288

Lab No.:6541825

Location: Stack-Bulkhead Stiffener

Concentration (s/cm²): 1730

Client No.: 35254-105b

Area (cm2): 400 Density (s/mm²): 288 Asbestos Type(s): Chrysotile Tremolite

Lab No.:6541826 Client No.: 35254-106b

Location: Field Blank Area (cm²): Blank

Density (s/mm²): <7.69

Concentration (s/cm²): NA Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Frank E. Ehrenfeld, III Laboratory Director

Signature: Analyst:

Approved By:

Page 2 of 4



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Appendix to Analytical Report:

Customer Contact: Project Managers And Contact on COC

Analysis: ASTM D6480 - 05(2010)

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com

iATL Office Manager: cdavis@iatl.com

iATL Account Representative:

Sample Login Notes: See Batch Sheet Attached Sample Matrix: Air Cassettes

Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D6480 - 05(2010)

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE." associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

(1)Note: Sample not analyzed.

(2)Note: Sample not analyzed at request of client.

(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm²). Set fails by AHERA 40 CFR 763.

(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.

(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.

Dated: 6/28/2018 6:30:55



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date: 6

6/27/2018

201 - 415 Gorge Road East

Report No.:

566679 - TEM Dust Wipe

Victoria BC V8T 2W1

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Client: NOR765

(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.

(6)Note: Sample turbidity > 1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).

(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"

(9)Note: Void - overloaded, unable to prep.

(10)Note: Void - filter damaged.

(11)Note: No volume supplied.

(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.

(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.

(13A)Note: Volume does not meet AHERA requirements.(<1188 L)

(14)Note: Geometric Mean = 0.xxxx Structures/cc

(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines

(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a

0.45um cassette.



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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

TOTAL WOOL ENVIRONMENTAL GROUP EN

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541814 Client No.:35254-91b

Volume Filtered (mL): 1 Dilution Factor (mL): 50 Grid Openings: 10

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.130 Sensitivity (s/mm²): 7.69

Detection Limit (s/cm²):3700

Area Sampled (cm²):100

Location: Upper D: Laundry Room-HVAC Duct Filter Size (mm²):962

Ashestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤7.69 Structure Concentration (s/cm²): ≤3700

Asbestos Type(s): None Detected Filter Type: MCE Filter Size (mm²): 96

Pore Size (mm²): 962

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s):

None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6541815 Client No.:35254-92b

Volume Filtered (mL):0.5
Dilution Factor (mL):50

Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): 7400

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Boat D: Fan Room-HVAC Duct

Asbestos Structures: 2

Structures < 5 Microns: 2 Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 14800

Asbestos Type(s):

Amosite Chrysotile Filter Type:MCE Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<7400

Non-Asbestos Type(s):

None Detected

Please re	eter to the	Pretace of t	nis report for fui	tner information	regarding your	anaiysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

French F. Florofeld III

Frank E. Ehrenfeld, III Laboratory Director

Page 1 of 8



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Troiter West Environmental Group End

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date:

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

6/27/2018

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541816 Client No.:35254-93b

Volume Filtered (mL): 1

Dilution Factor (mL): 50 Grid Openings: 4

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 9250

Micrograph Number: EDXA Spectrum ID:

Lab No.: 6541817 Client No.: 35254-94b

Volume Filtered (mL): 0.5 Dilution Factor (mL): 50 Grid Openings: 10 Opening Area (mm²): 0.013

Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69 Detection Limit (s/cm²):7400

Micrograph Number: EDXA Spectrum ID: Area Sampled (cm²): 100

Location: Wheelhouse-HVAC Duct

Ashestos Structures: 6

Structures < 5 Microns: 5 Structures ≥ 5 µm: 1

Structure Density (s/mm²): 115

Structure Concentration (s/cm²): 55500

Asbestos Type(s): Chrysotile Amosite

Area Sampled (cm²): 100

Location: Poop D: Alley Adjacent Galley-Main

Recirc Duct

Asbestos Structures: 4

Structures < 5 Microns: 3 Structures \ge 5 μ m: 1

Structure Density (s/mm²): 30.8

Structure Concentration (s/cm²): 29600

Asbestos Type(s):

Chrysotile

Filter Type: MCE

Filter Size (mm²):962 Pore Size (mm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2

Structure Concentration (s/cm²):<9250

Non-Asbestos Type(s):

None Detected

Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²):<7400

Non-Asbestos Type(s): None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018 06/27/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III

Laboratory Director

Page 2 of 8



9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd. 201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date:

6/27/2018

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541818

Area Sampled (cm²): 100

Filter Type: MCE

Client No.: 35254-95b

Location: Upper D: Cabin U-38 Supplemental

Filter Size (mm²): 962 Pore Size (µm): 0.45

Volume Filtered (mL): 1

Heating Duct Ashestos Structures: 1

Non-Ashestos Structures: None Detected

Dilution Factor (mL):50 **Grid Openings: 10**

Structures < 5 Microns: 1

Structure Density (s/mm²):<7.69

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69 Detection Limit (s/cm²):3700

Structures ≥ 5 µm: None Detected Structure Density (s/mm²): 7.69 Structure Concentration (s/cm²): 3700 Structure Concentration (s/cm²):<3700 Non-Asbestos Type(s):

Asbestos Type(s):

Chrysotile

None Detected

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²): 100

Filter Type: MCE Filter Size (mm²):962

Lab No.: 6541819 Client No.: 35254-96b

Location: Upper D: 3rd Officer-Supplemental

Pore Size (µm): 0.45

Volume Filtered (mL):2

Heating Duct Asbestos Structures: 2

Non-Asbestos Structures: None Detected

Dilution Factor (mL):50 **Grid Openings: 10** Opening Area (mm²): 0.013

Structures < 5 Microns: 1 Structures ≥ 5 µm: 1

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):<1850

Area Analyzed (mm²):0.130 Sensitivity (s/mm²): 7.69 Detection Limit (s/cm²): 1850

Structure Density (s/mm²): 15.4 Structure Concentration (s/cm²): 3700 Asbestos Type(s):

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Amosite Chrysotile

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date:

Report No.:

6/27/2018

566679 - TEM Dust

Rev #2, 6/28/2018

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.: 6541820

Client No.: 35254-97b

Client: NOR765

Volume Filtered (mL): 1 Dilution Factor (mL):50 Grid Openings: 10

Opening Area (mm²):0.013 Area Analyzed (mm²):0.130 Sensitivity (s/mm²):7.69

Detection Limit (s/cm²): 3700

Area Sampled (cm²): 100

Location: Boat D: Chief Officer-Supplemental

Heating Duct

Ashestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <7.69

None Detected

Filter Type:MCE Filter Size (mm²):962

Pore Size (µm): 0.45

Non-Ashestos Structures: None Detected

Structure Concentration (s/cm²): <3700

Asbestos Type(s):

Structure Density (s/mm²):<7.69

Structure Concentration (s/cm²):<3700

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Lab No.:6541821 Client No.: 35254-98b

Volume Filtered (mL):50 Dilution Factor (mL):50 Grid Openings:4 Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2

Detection Limit (s/cm²): 185

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100 Location: Field Blank

Ashestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤19.2 Structure Concentration (s/cm²): <185

Asbestos Type(s): None Detected

Filter Type: MCE Filter Size (mm²):962 Pore Size (µm): 0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of	i this report for further i	information regarding your analysis

Date Received:

6/25/2018

06/27/2018

Date Analyzed:

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust

- TEM Dust Rev #2, 6/28/2018

Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541822

Client No.: 35254-102b

Volume Filtered (mL): 50 Dilution Factor (mL): 50

Grid Openings: 4

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 185 Area Sampled (cm²): 100

Location: Stack-Stbd Air Supply Plenum

Ashestos Structures: 36

Structures < 5 Microns: 33 Structures ≥ 5 µm: 3

Structure Density (s/mm²): 692 Structure Concentration (s/cm²): 6660

Asbestos Type(s): Chrysotile Filter Type: MCE Filter Size (mm²): 962 Pere Size (µm): 0.45

Non-Ashestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<185

Non-Asbestes Type(s):

wre Concentration (s/cm²): 6660 None Detected

Micrograph Number: EDXA Spectrum ID:

Lab No.:6541823

Client No.: 35254-103b

Volume Filtered (mL): 15 Dilution Factor (mL): 50 Grid Openings: 4

Opening Area (mm²): 0.013 Area Analyzed (mm²): 0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²): 617

Micrograph Number: EDXA Spectrum ID:

Area Sampled (cm²): 100

Location: Stack-Main Engine Water Jacket Tank Filter Size (mm²):962

Ashestos Structures: None Detected

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): <19.2 Structure Concentration (s/cm²): <617

Asbestos Type(s): None Detected Filter Type:MCE

Filter Size (mm²):962 Pore Size (µm):0.45

Non-Asbestos Structures: None Detected

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<617

Non-Asbestos Type(s):

None Detected

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature: Analyst:

Dated: 6/28/2018 6:30:56

Approved By:

Frank Enemfel

Frank E. Ehrenfeld, III Laboratory Director

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CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

Report Date:

6/27/2018

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report No.:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

Project:

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541824

Area Sampled (cm²): 100

Filter Type: MCE

Client No.: 35254-104b

Location: Stack-Exhaust Pipe Support Strut

Filter Size (mm²):962

Volume Filtered (mL): 20 Dilution Factor (mL):50

Ashestos Structures: 15

Pore Size (µm):0.45 Non-Asbestos Structures: None Detected

Grid Openings:4

Structures < 5 Microns: 13

Structure Density (s/mm²):<19.2

Opening Area (mm²):0.013 Area Analyzed (mm²):0.0520 Structures ≥ 5 µm: 2 Structure Density (s/mm²): 288 Structure Concentration (s/cm²):<463

Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):463 Structure Concentration (s/cm²): 6940

Non-Asbestos Type(s):

None Detected

Asbestos Type(s): Chrysotile

Micrograph Number: **EDXA Spectrum ID:**

Area Sampled (cm²):400

Filter Type: MCE Filter Size (mm²):962

Lab No.: 6541825 Client No.: 35254-105b

Location: Stack-Bulkhead Stiffener

Non-Asbestos Structures: None Detected

Volume Filtered (mL):20 Dilution Factor (mL):50

Asbestos Structures: 15

Pore Size (µm): 0.45

Grid Openings:4 Opening Area (mm²): 0.013 Structures < 5 Microns: 12 Structures ≥ 5 µm: 3

Structure Density (s/mm²):<19.2 Structure Concentration (s/cm²):<116

Area Analyzed (mm²):0.0520 Sensitivity (s/mm²): 19.2 Detection Limit (s/cm²):116

Structure Density (s/mm²): 288 Structure Concentration (s/cm²): 1730 Asbestos Type(s):

Non-Asbestos Type(s): None Detected

Micrograph Number: **EDXA Spectrum ID:**

Chrysotile

Tremolite

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Frank E. Ehrenfeld, III

Signature: Analyst:

Laboratory Director

Dated: 6/28/2018 6:30:56

Page 6 of 8

Approved By:

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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd. 201 - 415 Gorge Road East

Victoria BC V8T 2W1

Report Date:

6/27/2018

. . .

Report No.:

Project:

566679 - TEM Dust

Rev #2, 6/28/2018

Wipe

W

CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Client: NOR765

TEM WIPE SAMPLE ANALYSIS DETAILS

Lab No.:6541826 Client No.:35254-106b

Area Sampled (cm²): Blank Location: Field Blank Filter Type: MCE Filter Size (mm²): 962 Pore Size (µm): 0.45

None Detected

Volume Filtered (mL):50 Dilution Factor (mL):50 Ashestos Structures: None Detected

Non-Asbestos Structures: None Detected

Grid Openings: 10
Opening Area (mm²): 0.013
Area Analyzed (mm²): 0.130
Sensitivity (s/mm²): 7.69
Detection Limit (s/cm²): NA

Structures < 5 Microns: None Detected Structures ≥ 5 µm: None Detected Structure Density (s/mm²): ≤7.69 Structure Concentration (s/cm²): NA

Structure Density (s/mm²):<7.69 Structure Concentration (s/cm²):NA Non-Asbestos Type(s):

Asbestos Type(s):
None Detected

Micrograph Number: EDXA Spectrum ID:

Please refer to the Preface of this report for further information regarding your analysis.

Date Received:

6/25/2018

Date Analyzed:

06/27/2018

Signature:

Analyst:

Approved By:

Frank E. Chronfold III

Frank E. Ehrenfeld, I Laboratory Director

Dated: 6/28/2018 6:30:56

Page 7 of 8



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9000 Commerce Parkway Suite B Mt. Laurel, New Jersey 08054 Telephone: 856-231-9449 Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: North West Environmental Group Ltd.

201 - 415 Gorge Road East

Victoria BC V8T 2W1

Client: NOR765

Report Date: 6/27/2018

Report No.: 566679 - TEM Dust Wipe

Project: CCGS Bartlett-General Hazmat Consulting

Project No.: 35254

Dated: 6/28/2018 6:30:56

CCGS-NGCC, Bartlett Logistics Officer

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

July-02-18 8:55 AM

To:

CCGS-NGCC, Bartlett Logistics Officer

Cc:

Subject:

CCGS-NGCC, Bartlett Senior Engineer FW: Deckhead Cavity ACM TEM Swipes

FYI. Historical.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From: CCGS-NGCC, Bartlett Captain

Sent: June-24-18 6:01 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Subject: RE: Deckhead Cavity ACM TEM Swipes

What is the date of these tests?

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: 2018-06-24 17:51

To: CCGS-NGCC, Bartlett Captain

Cc: CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer;

CCGS-NGCC, Bartlett Engine Room; Chaikin Gabriel

Subject: Deckhead Cavity ACM TEM Swipes

Importance: High

Captain,

The following areas above dropped ceilings were tested for ACM using TEM Swipe:

1. Upper Deck – Stb'd-Aft Alleyway:

27,800 s/cm2 Chrysotile

2. Upper Deck - Stb'd-Aft W/T Door:

204,000 s/cm2 Chrysotile Amosite

3. Aft Oilers Cabin:

37,000 s/cm2 Chrysotile

4. Logistics Office:

"none" detected

5. Cadet Cabin:

"none" detected

6. Bridge:

"none" detected (just below limit – 9,250 s/cm2)

Regards,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

<u>BartlettCE@bar.ccgs-ngcc.gc.ca</u>

<u>BartlettChief@gmail.com</u> for files above 5 MB

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CCGS-NGCC, Bartlett Chief Officer

From: CCGS-NGCC, GordonReid Captain

Sent: July-04-18 7:52 AM

To: CCGS-NGCC, Bartlett Chief Officer

Subject: Fishing for info

Ryan

The rumour mill is crazy these days with regard to Bartlett and asbestos.

I am making an effort to keep crew informed with facts as opposed to what reaches the ship from various sources.

If you have time, would you fire me back a quick e-mail on how it's going over there.

Remediation complete?

Crew on board?

Crew sleeping with no mattresses?

I would e-mail the Captain, but the sitreps aren't listing a Captain at the moment, and I know you responded to our request for Justin's PA the other day.

If you are too busy, I understand, it's not critical. Just trying to keep rumours down and facts up.

Thanks,

Nick

Nicola Mancey

Commanding Officer, CCGS Gordon Reid

Ships Cell Portable Cell Iridium Ships Email: ReidCO@ccgs-ngcc.gc.ca

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Main Ops Officer / Agent principal des Ops (DFO/MPO)

From: CCGS-NGCC, Bartlett Captain
Sent: July-05-18 7:12 AM

To: CCGS-NGCC, Bartlett Chief Engineer; 'Jen Taptuna'

Cc:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC,

Bartlett Logistics Officer

Subject: RE: Bartlett - DOP Testing Vacs

The stick vacs spread fine dust into the air. They were targeted for removal as a health hazard anyway.

Μ.

Captain Michael Shuckburgh

in port

at sea

From: CCGS-NGCC, Bartlett Chief Engineer

Sent: 2018-07-04 18:32

To:

CCGS-NGCC, Bartlett Captain; CCGS-NGCC, Bartlett Senior Engineer;

CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer

Subject: RE: Bartlett - DOP Testing Vacs

OK, thanks Talal, our Transport Canada inspector asked me to check on whether the Void Vent Fan has a DOP Cert. The Fan is presently on the dock and is very easily transported.

And as for the 4 Accommodation vacs that should never get used for asbestos abatement, some people are thinking that they will never intentionally be used for ACM cleanup, (except for when the ambient 9,999 s/cm2 settles onto carpets), and so it's irrelevant if they actually contain asbestos or spread exhaust back into the ambient ship air. The other argument is, if it does not matter whether or not the HEPA units pass the seal test, do we really need to use these cumbersome units rather than the much preferred stick vacs.

But we'll discuss when we see you next.

Regards.

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: July-04-18 4:38 PM

To: CCGS-NGCC, Bartlett Chief Engineer

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer

Subject: RE: Bartlett - DOP Testing Vacs

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Hi there, generally HEPA vacuums should be tested at least annually, however, more frequent testing is recommended if they are dropped, transported long distances, or handled roughly as jolts and bumps can cause damage to filters or unseat gaskets.

I'm not sure about the fan in the void space. Some units claim to be HEPA rated, however, they are configured in such a way that they can't actually be tested (at least with our equipment). I'll take a look at it next time I'm on board.

Best,



Project Manager North West Environmental Group Ltd.

From: CCGS-NGCC, Bartlett Chief Engineer < BartlettCE@ccgs-ngcc.gc.ca >	
Sent: July 4, 2018 4:23 PM	
To:	
Cc:	CCGS-NGCC, Bartlett Senior Engineer
<bartlettse@ccgs-ngcc.gc.ca>; CCGS-NGCC, Bartlett Chief Officer <bartlettchc< p=""></bartlettchc<></bartlettse@ccgs-ngcc.gc.ca>)@ccgs-ngcc.gc.ca>
Subject: Bartlett - DOP Testing Vacs	
Importance: High	
,	

Could someone please advise us on the requirement for us to DOP test all of our HEPA Vacuum. We have the following inventory:

- 1. Engine Room HEPA Vacuum Recently DOP tested.
- 2. Identical Euroclean vac to above x 4 units for general purpose accommodation carpet vacuuming.
- 3. Deck Dustless Tool HEPA Vac (for lead paint collection etc)
- 4. Bridge Void Space HEPA Fan → used to create sight vacuum in ACM contaminated Bridge Void and discharge to atmosphere

Many Thanks,

Could Day

Ross McKenzie Chief Engineer, CCGS Bartlett Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

s.16(2) cument Released Under the Access to prormation Act / Document divulgué en vertu (1) la Loi sur l'accès à l'information

CCGS-NGCC, Bartlett Captain

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

July-09-18 5:00 PM

To:

Cc:

'George Kohorst'; CCGS-

NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Engine Room; CCGS-NGCC,

Bartlett Captain; CCGS-NGCC, Bartlett Chief Officer; CCGS-NGCC, Bartlett Wheelhouse

Subject:

FW: Bartlett WH Consoles

Importance:

High

Please continue to record ambient air sample on Bridge every day that George / KOHO is working on the Bridge Electronic Cabinets. (.... Even if that is every day for the next 3 weeks).

Many Thanks,

Ross McKenzie

Chief Engineer, CCGS Bartlett

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: July-06-18 11:03 AM

To: CCGS-NGCC, Bartlett Chief Engineer; CCGS-NGCC, Bartlett Senior Engineer

Cc: Chaikin Gabriel:

Subject: Bartlett WH Consoles

Good afternoon, below is a short work procedure for George's work in the WH consoles. I confirmed that an enclosure is not required (moderate risk, proven air flow through the consoles when using the negative air unit (NAU)).

- 1. Place a drop sheet on the floor around the work area. Place Asbestos Barrier tape approx. 6 ft around the work area. Unprotected workers are not permitted within the barrier.
- 2. Install the NAU, duct out of a front window. Keep adjacent windows closed when running the NAU. Plug or seal penetrations into the void space to ensure that air drawn into the consoles is fresh air from the WH.
- 3. Using brushes and a certified HEPA vacuum, clean all surfaces within consoles (cables, trays, metal surfaces, etc.), top to bottom, and working towards the NAU (going the opposite direction will cause cleaned surfaces to be re-contaminated as dust blows past them into the NAU).
- 4. Using brushes and HEPA vacuum, unbundle cables, cleaning continuously.
- 5. Using Baby wipes or similar, wipe smooth cables.
- 6. HEPA vacuum braided and textile cables. Turn the NAU off and apply an approved encapsulant. Allow to dry.
- 7. Conduct other work in a similar fashion (i.e. continuous cleaning, encapsulation): cable cutting, replacing equipment, etc.

NWest will be on site for 8:30 Monday morning to collect an Occupational samples. An ambient is not required – let me know if you want to do one though.

Let me know if you have any questions or concerns.

Best,

Project Manager

North West Environmental Group Ltd.



#201 – 415 Gorge Road East Victoria, B.C. V8T 2W1

C:

O: (250) 384-9695 ext.

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.

Ayres, Bob

From:

CCGS Sir Wilfrid Laurier - Logistics <LaurierLO@swl.ccgs-ngcc.gc.ca>

Sent:

Tuesday, July 10, 2018 7:35 AM

To:

Ayres, Bob

Subject:

RE: Procedure for Reporting Asbestos Exposure

Thanks Bob

For those who served aboard "Provo Wallis" on this coast that information will be welcome.

Cheers,

Miles

Miles G. Taylor

Logistics Officer

CCGS Sir Wilfrid Laurier

Email: LaurierLO@swl.ccgs-ngcc.gc.ca

Large attachments to: swlaurierlo@gmail.com

Cell:

Landline: 1-250-480-2694

Globalstar:

Iridium Voice:

Fleet Broadband:

Tellular:

From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]

Sent: Tuesday, July 10, 2018 7:32 AM **To:** CCGS Sir Wilfrid Laurier - Logistics

Subject: RE: Procedure for Reporting Asbestos Exposure

Great - thank you.

P.S. Regarding the Provo – I asked a Fleet Manager about that and was advised that the Provo was reported to have had a full asbestos remediation during her lengthening – if that makes a difference.

From: CCGS Sir Wilfrid Laurier - Logistics <LaurierLO@swl.ccgs-ngcc.gc.ca>

Sent: Tuesday, July 10, 2018 7:26 AM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>

Subject: RE: Procedure for Reporting Asbestos Exposure

Good morning Bob

Thank you for forwarding the bulletin.

Confirmed – it was received and posted on or about June 22. Because I couldn't find the electronic version I wasn't certain that it had been received.

Thanks again.

Miles

Wiles G. Taylor

Logistics Officer

CCGS Sir Wilfrid Laurier

Email: <u>LaurierLO@swl.ccgs-ngcc.gc.ca</u> Large attachments to: swlaurierlo@gmail.com

Cell:

Landline: 1-250-480-2694

Globalstar:

Iridium Voice: Fleet Broadband:

Tellular:

From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.gc.ca]

Sent: Tuesday, July 10, 2018 6:34 AM **To:** CCGS Sir Wilfrid Laurier - Logistics

Subject: RE: Procedure for Reporting Asbestos Exposure

Good morning Miles.

Here is bulletin. If you don't mind could you confirm this was received by the ship, and ideally posted? It should have been distributed by the ROC on June 21 or 22.

Thanks very much,

Bob

From: CCGS Sir Wilfrid Laurier - Logistics < LaurierLO@swl.ccgs-ngcc.gc.ca >

Sent: Monday, July 9, 2018 6:13 PM

To: Ayres, Bob < Bob.Ayres@dfo-mpo.gc.ca >

Subject: RE: Procedure for Reporting Asbestos Exposure

Hi Bob

Thank you for the prompt reply to my query.

I'm unable to locate the bulletin you refer to. Would you kindly have it forwarded to me.

Thank you for your assistance.

Best regards,

Miles

Wilcs G. Taylor

Logistics Officer

CCGS Sir Wilfrid Laurier

Email: LaurierLO@swl.ccgs-ngcc.gc.ca

Large attachments to: swlaurierlo@gmail.com

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Cell:

Landline: 1-250-480-2694

Globalstar: _____ Iridium Voice:

Fleet Broadband:

Tellular:

From: Ayres, Bob [mailto:Bob.Ayres@dfo-mpo.qc.ca]

Sent: Monday, July 09, 2018 4:30 PM **To:** CCGS Sir Wilfrid Laurier - Logistics

Subject: RE: Procedure for Reporting Asbestos Exposure

Hello Miles,

The recommended method for reporting is as per the bulletin that was sent out and that is to submit electronically to Worksafe BC via the Exposure Registry. Worksafe then keeps this on permanent record in case of any future need to reference for a work related claim.

There is not a need to send separate record to CG management. Worksafe apparently sends by mail a confirmation to both the originator and the employer (we are recommending that be DFO as per the address in part 6 of the bulletin).

I don't have any information on Provo right at hand but by the age of that ship I would say it most likely also has/had asbestos, as does other of our older ships.

I would recommend that anyone with concerns consider the Exposure Registry as the preferred method of documenting and if doing so, indicate on the form a summary of work (type of work that may have resulted in exposure, frequency, duration, etc.) on ships with asbestos to document potential exposure.

Regards, Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

From: CCGS Sir Wilfrid Laurier - Logistics < LaurierLO@swl.ccgs-ngcc.gc.ca>

Sent: Monday, July 9, 2018 2:38 PM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>

Subject: FW: Procedure for Reporting Asbestos Exposure

Good afternoon Bob

I hope this finds you well.

Further to the discussion regarding the "Bartlett" and associated asbestos exposure.

s.16(2)

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Would you kindly advise the avenue by which personnel are to report any career asbestos exposure. To CCG management, Work Safe (WCB) etc.

Has there been any association for "CCGS Provo Wallis" to the question of asbestos exposure?

Thank you for your assistance.

Best regards,

Miles

Wilcs G. Taylor

Logistics Officer

CCGS Sir Wilfrid Laurier

Email: <u>LaurierLO@swl.ccgs-ngcc.gc.ca</u>

Large attachments to: swlaurierlo@gmail.com

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Landline: 1-250-480-2694

Globalstar:

Iridium Voice:

Fleet Broadband:

Tellular:

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Ayres, Bob

From:

Ayres, Bob

Sent:

Wednesday, July 11, 2018 10:49 AM

To:

Subject:

RE: Asbestoes claims -

Attachments:

Western Region Safety Bulletin - Asbestos and Lead Paint June 21.pdf

Hi

The Regional Safety Bulletin that was sent out on June 22nd includes advice on how to document. Best to submit electronically - the link is in part 6 of the bulletin.

I should also clarify that it's not a matter at this point of submitting a claim, as a claim would only be made if there is an illness or identified health effect, but rather documenting that you worked in an environment with a known hazard and potentially were exposed. Important to note regarding the Bartlett is that all of the air monitoring done to date has indicated no detectable or quantifiable asbestos in the air.

Please feel free to contact me if any questions, Bob

Bob Ayres

Manager, Coast Guard Safety and Security Canadian Coast Guard - Western Region 25 Huron Street, Victoria BC, V8V 4V9

Office: 250-480-2636 Cell:

E-mail: bob.ayres@dfo-mpo.gc.ca

From:

Sent: Tuesday, July 10, 2018 8:03 PM

To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca> Subject: Asbestoes claims -

Good evening,

I was wondering what the process is to submitt a claim woth regards to asbestos since I was on the Bartlett for about 3 years.

Thank you,

Pages 1510 to / à 1513 are duplicates of sont des duplicatas des pages 1548 to / à 1551

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Labelle-Rice, Roxane

From:

Richardson, John

Sent:

July-17-18 3:33 PM

To: Cc: DeAngelis, Vincenzo Harvey, Clifford

Subject:

RE: Asbestos Mitigation and Management - Bartlett

Wondering if a consult with www.worksafebc.com might be helpful in determining a way forward?

John

From: Richardson, John Sent: 2018–July-17 3:18 PM

To: Harvey, Clifford; DeAngelis, Vincenzo

Subject: RE: Asbestos Mitigation and Management - Bartlett

Will speak with Vince about this but obviously it is a delicate topic. With all the air sampling done I don't believe they ever had any indication of asbestos fibres therefore meeting the reg requirements, but I can understand that crewmembers would be concerned, and I'm not sure how best to convince them that they are safe.

From: Harvey, Clifford Sent: 2018–July-17 3:11 PM

To: DeAngelis, Vincenzo; Richardson, John

Subject: FW: Asbestos Mitigation and Management - Bartlett

Importance: High

Can we have a discussion, would like to see how we can support Cliff on the west coast.

Cliff

Clifford Harvey

From: Hunt, Cliff

Sent: Monday, July 16, 2018 7:55 PM

To: Harvey, Clifford < <u>Clifford.Harvey@dfo-mpo.gc.ca</u>> **Subject:** Asbestos Mitigation and Management - Bartlett

Cliff,

The SME contractors

will only recommend courses of action. They won't or can't say when mitigation has been deemed to be complete. And apparently Health Canada isn't definitive either on the matter.

Document Released Under the Access to s.16(2) mation Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

My question to you is do we have subject matter experts on methods and standards in CCG? Perhaps experienced engineers or project managers who have already been through this process on other CCG vessels.

Any help or advice you can provide would be appreciated.

Cliff Hunt

Regional Director Integrated Technical Services Canadian Coast Guard Western Region Phone (250) 480-2762 Cell

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Labelle-Rice, Roxane

From:

Hunt, Cliff

Sent:

July-18-18 7:07 PM

To:

Harvey, Clifford

Subject:

RE: Asbestos Mitigation and Management - Bartlett

That is great information. I think we have the testing and ongoing monitoring piece sorted out but I may ask RD Fleet if she is interested in the training component or any of the documentation that was developed.

Really appreciate your support on this.

Cliff

From: Harvey, Clifford

Sent: Wednesday, July 18, 2018 4:02 PM **To:** Hunt, Cliff < Cliff.Hunt@dfo-mpo.gc.ca >

Subject: Re: Asbestos Mitigation and Management - Bartlett

We actually discussed this at our its/ops meeting today. Based on the discussion today I was going to suggest that we have Pinchin LeBlanc hired to revisit the training for the crew onboard, and perform testing if required. This company was involved intimately when the issue was being addressed 15-20 years ago, and may have actually have developed most of our existing documentation.

We'll stand down for now, but if you need some support please do let me know.

Cheers,

Cliff

Clifford Harvey

From: Hunt, Cliff

Sent: Wednesday, July 18, 2018 6:53 PM

To: Harvey, Clifford

Subject: RE: Asbestos Mitigation and Management - Bartlett

We may have wrestled things back under control.

I think we are good for now.

Thanks

Cliff

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From: Harvey, Clifford

Sent: Monday, July 16, 2018 5:27 PM **To:** Hunt, Cliff < Cliff.Hunt@dfo-mpo.gc.ca >

Subject: Re: Asbestos Mitigation and Management - Bartlett

Cliff,

Been some time since i dealt with asbestoa the last time i was in CG. I am surprised its still an issue.

I will ask the team tomorrow and see how we can provide support.

Will get back tomorrow.

Cliff

Get Outlook for Android

From: Hunt, Cliff

Sent: Monday, July 16, 7:54 PM

Subject: Asbestos Mitigation and Management - Bartlett

To: Harvey, Clifford

Cliff,

The

SME contractors will only recommend courses of action. They won't or can't say when mitigation has been deemed to be complete. And apparently Health Canada isn't definitive either on the matter.

My question to you is do we have subject matter experts on methods and standards in CCG? Perhaps experienced engineers or project managers who have already been through this process on other CCG vessels.

Any help or advice you can provide would be appreciated.

Cliff Hunt

Regional Director Integrated Technical Services Canadian Coast Guard Western Region Phone (250) 480-2762 Cell

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s.21(1)(b)

Labelle-Rice, Roxane

From: Sent: DeAngelis, Vincenzo July-18-18 6:31 AM

To:

Harvey, Clifford; Richardson, John

Subject:

RE: Asbestos Mitigation and Management - Bartlett

Good morning Cliff and John,

I can call you both just before lunch or this afternoon to discuss

Best Regards,

Vince

Vince De Angelis
Marine Engineering | Ingénierie Navale
Integrated Technical Services | Services Techniques Intégrés
Canadian Coast Guard | Garde Côtière Canadienne
200 Kent Street, Office | Bureau 7W077
Ottawa, ON, K1A 0E6
vincenzo.deangelis@dfo-mpo.gc.ca
Telephone | Téléphone 613-219-2733

From: Harvey, Clifford

Sent: Tuesday, July 17, 2018 3:11 PM

To: DeAngelis, Vincenzo < Vincenzo. DeAngelis@dfo-mpo.gc.ca >; Richardson, John < John. Richardson@dfo-mpo.gc.ca >

Subject: FW: Asbestos Mitigation and Management - Bartlett

Importance: High

Can we have a discussion, would like to see how we can support Cliff on the west coast.

Cliff

Clifford Harvey

From: Hunt, Cliff

Sent: Monday, July 16, 2018 7:55 PM

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To: Harvey, Clifford < <u>Clifford.Harvey@dfo-mpo.gc.ca</u>> **Subject:** Asbestos Mitigation and Management - Bartlett

Cliff,

The SME contractors

will only recommend courses of action. They won't or can't say when mitigation has been deemed to be complete. And apparently Health Canada isn't definitive either on the matter.

My question to you is do we have subject matter experts on methods and standards in CCG? Perhaps experienced engineers or project managers who have already been through this process on other CCG vessels.

Any help or advice you can provide would be appreciated.

Cliff Hunt

Regional Director Integrated Technical Services Canadian Coast Guard Western Region Phone (250) 480-2762 Cell

s.19(1)

Ivanisevic, Lynda

From:

Ivanisevic, Lynda

Sent:

2018-July-18 9:52 AM

To:

Subject:

RE: FW: Pay Question

Absolutely. We are working on a next training date as we speak. I will ensure you are included for future consideration. If when you join the ship you complete a PA and discuss training, please ensure it is included in your learning plan.

Any other questions, please do not hesitate to contact me.

Lynda Ivanisevic

Supervisor Seagoing Personnel Canadian Coast Guard

Email: Lynda.Ivanisevic@dfo-mpo.gc.ca

Telephone: (250) 480-2750

From:

Sent: 2018-July-18 9:50 AM

To: Ivanisevic, Lynda

Subject: Re: FW: Pay Question

Hi Lynda,

Thanks for getting back to me. I appreciate the quick response. It does address my concerns. I would love to be included on any future training if it becomes available, I'm sure I will receive the necessary familiarization when I arrive on board.

Thanks again,

On Jul 18, 2018 09:17, "Ivanisevic, Lynda" < Lynda.Ivanisevic@dfo-mpo.gc.ca> wrote:

Hi

As outlined in the attached CCG Western Region – Regional Fleet Bulletin, the "potential" for exposure to asbestos has been minimal and ongoing monitoring/testing has identified these risks as minimal. Through a comprehensive analysis of samples obtained from the ship, although the presence of asbestos has been confirmed in certain areas (residual dust wipe samples), there has been no indicators that positively identify the presence of "airborne friable asbestos" on the ship. Ongoing control and monitoring measures are in place to ensure the health and safety of all CCG employees. Health Canada and the environmental consultants, together with the results of air monitoring, have provided CCG with confidence to operationalize the ship with little to no risk to our personnel.

s.19(1)

I am looking to see whether further training is being offered for the crew, but regardless, I am sure there will be discussions and familiarisation provided on board the vessel when you join.

Does this address your concerns?

Lynda Ivanisevic

Supervisor Seagoing Personnel

Canadian Coast Guard

Email: Lynda.Ivanisevic@dfo-mpo.gc.ca

Telephone: (250) 480-2750

From: Harding, Ashleigh Sent: 2018–July-18 8:53 AM

To: Ivanisevic, Lynda **Subject:** FW: Pay Question

HI Lynda,

Please see below.

From

Sent: Tuesday, July 17, 2018 10:00 PM

To: Harding, Ashleigh < Ashleigh. Harding@dfo-mpo.gc.ca >

Subject: Re: Pay Question

Hi Ashleigh,

Yes, I have seen that already. Just worried a bit about the condition of the ship. The latest IIR that was sent out showed that asbestos dust was found in the third officer cabin, and this comes just shortly after an email stated that remediation has occurred and showed negative for asbestos. I'm curious what this means and what I can do if I suspect asbestos as I have no formal training in the matter.

Pages 1523 to / à 1527 are withheld pursuant to section sont retenues en vertu de l'article

19(1)

of the Access to Information Act de la Loi sur l'accès à l'information

Ivanisevic, Lynda

From:

Ivanisevic, Lynda

Sent:

2018-July-18 8:18 AM

To:

Rolinski, Regina; Smith, Mike

Cc: Subject:

FW: Crew Change

Attachments:

Western Region Safety Bulletin - Asbestos and Lead Paint June 21.pdf

your email has been provided to me for a response.

As outlined in the attached CCG Western Region – Regional Fleet Bulletin, the "potential" for exposure has been minimal and ongoing monitoring/testing has identified these risks as minimal. Through a comprehensive analysis of samples obtained from the ship, although the presence of asbestos has been confirmed in certain areas (residual dust wipe samples), there has been no indicators that positively identify the presence of "airborne friable asbestos" on the ship. Ongoing control and monitoring measures are in place to ensure the health and safety of all CCG employees. Health Canada and the environmental consultants, together with the results of air monitoring, have provided CCG with confidence to operationalize the ship with little to no risk to our personnel and as such there should be no expectation that personnel will need to be accommodated by switching crews/ships. If it was unsafe for a particular person, then it would be unsafe for all employees and that would be unacceptable to CCG.

As per the bulletin, I would encourage any personnel who feel they may have been potentially exposed to register in the BC Exposure WorkSafe Program, ensure they submit an incident report to Health Canada for their personnel medical file, and consult with their personal physician regarding any exposure history and personal health risks.

At this time due to operational needs, we have you scheduled to return to the Bartlett. Your experience is required to ensure safe operations and to ensure the crewing profiles are maintained.

Please feel free to contact me if you have any further concerns.

Lynda Ivanisevic

Supervisor Seagoing Personnel Canadian Coast Guard

Email: Lynda.Ivanisevic@dfo-mpo.gc.ca

Telephone: (250) 480-2750

From: Rolinski, Regina Sent: 2018–July-09 7:41 AM

To: Ivanisevic, Lynda **Subject:** FW: Crew Change

From:

Sent: July-09-18 3:09 AM

To: Rolinski, Regina < Regina. Rolinski@dfo-mpo.gc.ca >

Subject: Re: Crew Change

Regina,

To be honest, I don't feel comfortable coming back to the Bartlett at this time due to the reports of unacceptable levels of friable airborne asbestos and asbestos dust on horizontal surfaces throughout the ship.

I have read the fleet wide bulletin on the subject but feel it leaves to many unanswered questions. I am not convinced it is unsafe but I'm not at all convinced that it is.

The fact that I sailed on the Bartlett for nearly 3 years with these levels going unreported tells me I may have suffered irreversible damage to my health and gives me some degree of anxiety.

I am requesting to transfer to a vessel where I can feel safe and free of the stress of not knowing if my health is at risk. If at all possible I would like to return to the Gordon Reid.

I feel poorly in leaving the crew of the Bartlett in their program but I put myself first in this situation.

Sorry for making this difficult for you but this is how I currently feel.

On Jul 5, 2018 10:30 AM, "Rolinski, Regina" < Regina. Rolinski @dfo-mpo.gc.ca> wrote:

Hello

I talked to Ryan Gurr this week and he is requesting that you return to the Bartlett for the August 8th patrol. The ship is short on experienced deck hands and does not feel that now is the right time to lose you. I am happy to work with you and the ship to make the move happen for you though that may be once the Laurier is in her VLE this winter. I know it's not what you were hoping for

Regina

Regina Rolinski

Crewing Officer

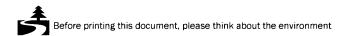
Seagoing Personnel

25 Huron Street

Victoria, BC

250-480-2776

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Pages 1531 to / à 1534 are duplicates of sont des duplicatas des pages 1548 to / à 1551



Worker and Employer Services Division

Mailing Address
PO Box 5350 Stn Terminal
Vancouver BC V6B 5L5

Location 6951 Westminster Highway Richmond BC

Prevention Records
Direct Line: 604 276-3231

Telephone 604 276-3100 Toll-free within BC 1 888 621-7233

FAX: 604 276-3292

www.worksafebc.com

July 18, 2018

Canadian Coast Guard 25 Huron Street Victoria BC V8V 4Z9

Dear :

Canada

Re: Notification of Occupational Exposure Incident

WorkSafeBC maintains a voluntary exposure registry as a way for workers, employers, and others to register a worker's exposure to a harmful substance at work.

Please be advised that an occupational exposure incident was registered with WorkSafeBC. The details of the incident are on the attached exposure registry form.

If you have further information about the incident, please complete a separate exposure registry form. (You'll find it on the WorkSafeBC website at http://www.worksafebc.com/forms/assets/pdf/41M1.pdf). Additional questions regarding the registry form should be directed to Prevention Records at 604 276-3231.

WorkSafeBC will retain all the information provided on these forms as a permanent record of the worker's exposure.

c.c.: worker, employer

Enclosures

Pages 1536 to / à 1540 are withheld pursuant to section sont retenues en vertu de l'article

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s.16(2) s.19(1) Document Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

Ayres, Bob

F	ro	m:	
-			

Ayres, Bob

Sent:

Thursday, July 19, 2018 4:09 PM

To:

Richardson, Dena

Subject:

RE: Please update Bob

Attachments:

Bartlett one pager July 19 2018.docx

Hi Dena,

As discussed, attached is a fresh summary.

feel free to ask if any questions.

Bob

From: Richardson, Dena

Sent: Thursday, July 19, 2018 8:02 AM
To: Ayres, Bob <Bob.Ayres@dfo-mpo.gc.ca>

Subject: Please update Bob

Hi Bob,

The Commissioner is asking for an update on the Bartlett, this is the one pager that I prepared for NPHSC. Can you please take a look at it and update it for me? He is asking for it by CoB today. I'm sorry.

I took the majority of info from the Safety Bulletin you prepared because it was for NPHSC, but please include any details that you may have as it relates to the progress in the asbestos abatement / containment or any other piece of information that you feel is relevant.

Thanks, Dena

Dena Richardson

Director, CG Safety & Security Branch
Canadian Coast Guard / Government of Canada
Dena.richardson@dfo-mpo.gc.ca / Tel: 613-990-3375
Blackberry:

Directrice, Direction de la Sécurité et sûreté de la GC Garde côtière canadienne / Gouvernement du Canada Dena.richardson@dfo-mpo.gc.ca / Tél: (613) 990-3375

Blackberry:

The CCGS Bartlett, like other ships of the era (1969) was constructed with asbestos containing materials (ACM). While there is a long history of asbestos surveys and remediation efforts, findings in February of 2018 led to additional planned remediation for the May/June refit. Follow-up testing led to further findings in dust wipe tests and an immediate decision to stop all work with potential to disturb ACM.

Positive test results included dust wipes in a variety of areas including wire-ways, deck-heads and other areas on the ship. A notable and later finding was of high concentrations of asbestos structures in the ship's stack, which presented particular challenges to remediation and ultimately resulted in a decision to encapsulate in that area. While initial samples from the ventilation ducts showed negative, subsequent testing did find some asbestos structures in the ducting and this will also be addressed.

An asbestos remediation contractor was engaged to conduct a thorough cleaning of suspect areas and finalize a plan to encapsulate material in identified areas. Importantly, air monitoring on the ship in a variety of locations, times and operating states, including prior the start of cleaning efforts, have all resulted in results either below the limit of detection or below the limit of quantitation for asbestos.

Significant efforts continue to be made by CCG Fleet, Marine Engineering, support personnel and contractors. As of July 19th the remediation, cleaning and encapsulation is progressing well and is on track for completion by the projected end of refit July 27th.

The priority throughout has been on the health and safety of personnel.

- Environmental consultant (Northwest Environmental) contracted to conduct a comprehensive regime of sampling and to audit remediation work. This sampling continues and will include air monitoring on an on-going basis even once the ship returns to program.
- Specialist contractor (Quantum Murray) hired to conduct cleaning and encapsulation.
- CG crews were moved off ship during the most intensive of the cleaning efforts and potentially suspect soft materials, including bedding, mattresses and some furnishings replaced.
- The Health Canada Occupational Health Medical Officer was engaged from the outset.
- Crews briefed as to status from the outset. This included two separate sessions with the Health Canada physician and consultants. These sessions included briefing of known information and provided an opportunity for question and answer to both Fleet and shore-based personnel.
- A Regional Safety Bulletin was distributed to all Fleet and all CCG in region. This bulletin included background to the issue, a summary of workplace controls and options for health and exposure documentation.
- The Fleet Safety Manual 7.A.10 provides guidance to ships with ACM and includes the requirement for a Vessel Specific Asbestos Management Plan (VSAMP). This is in place on the Bartlett.
- Additional training in Asbestos Awareness and Abatement has been targeted to Bartlett crews and to personnel of other ships with ACM and appropriate shore-based personnel.

Refit and remediation is projected to finish by July 27th or shortly thereafter, to be followed by two days of Transport Canada inspections and then sea trials. The next crew change is set for August 8th and the Bartlett is to resume a full program of work at that time.

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Smith, Mike

From: Ivanisevic, Lynda

Sent: 2018–July-19 11:30 AM

To:

Cc: Smith, Mike; Jersch, Russell

Subject: FW: Bartlett

Attachments: Western Region Safety Bulletin - Asbestos and Lead Paint June 21.pdf

Hi

Your email has been provided to me for a response.

As outlined in the attached CCG Western Region – Regional Fleet Bulletin, the "potential" for exposure has been minimal and ongoing monitoring/testing has identified these risks as minimal. Through a comprehensive analysis of samples obtained from the ship, although the presence of asbestos has been confirmed in certain areas (residual dust wipe samples), there has been no indicators that positively identify the presence of "airborne friable asbestos" on the ship. Ongoing control and monitoring measures are in place to ensure the health and safety of all CCG employees. Health Canada and the environmental consultants, together with the results of air monitoring, have provided CCG with confidence to operationalize the ship with little to no risk to our personnel and as such there should

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be no expectation that personnel will need to be accommodated by switching crews/ships. If it was unsafe for a particular person, then it would be unsafe for all employees and that would be unacceptable to CCG.

At this time, your next assignment will remain on the Bartlett.

Please feel free to contact our office should you have any further questions.

Lynda Ivanisevic

Supervisor Seagoing Personnel Canadian Coast Guard

Email: Lynda.Ivanisevic@dfo-mpo.gc.ca

Telephone: (250) 480-2750

From: Harding, Ashleigh Sent: 2018–July-19 11:05 AM

To: Ivanisevic, Lynda **Subject:** FW: Bartlett

FYI - Another asbestos concern.

From:

Sent: July-19-18 11:02 AM

2

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Things have gone well here on the Tully. I've heard rumors, as is always the case on coast guard ships, and just wanted to confirm that you do want me to leave the Tully on the 17th and head to the Bartlett. The internet has not been working reliably so I'll make sure I check for emails before leaving on Tuesday morning.

Thank you,

No information has been removed or severed from this page

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To: Harding, Ashleigh **Subject:** Bartlett

Hi Asheigh,

I'm guessing I'm not too far from you right now. I'm here on the Bartlett. I hoping to find some time to pop by today and drop some stuff off and meet some people in the officer. Just wanted to drop you and line before it's too late to inquire about my next shift following this one. I'll be honest with you, I do like the Bartlett but the asbestos does cause me concern.

If it is at all possible that I could be placed on another ship following this shift, I would appreciate it.

Thank you,

From: Harding, Ashleigh [mailto:Ashleigh.Harding@dfo-mpo.gc.ca]

Sent: July-16-18 11:01 AM

To:

Subject: Crew Change to the Bartlett -

Perfect, but will be in the office on Tuesday's and Thursday's. Hopefully I will get a chance to meet you and It will work for you to come in for a quick tour of the office.

Cheers, Ashleigh Degrant Released Under the Access to Information Act / Document divulgué en vertu de la Loi sur l'accès à l'information.

From:
Sent: Monday, July 16, 2018 10:56 AM
To: Harding, Ashleigh < Ashleigh. Harding@dfo-mpo.gc.ca>
Subject: : Crew Change to the Bartlett

Good Morning Ashleigh,

Thank you for the confirmation. I'll be making my way to the Bartlett tomorrow. With the time alongside I'm sure I'll have time to stop by the office and say hello.

Thank you,

From: Harding, Ashleigh [Ashleigh.Harding@dfo-mpo.gc.ca]

Sent: July 16, 2018 2:51 PM

To:

Cc: CCGS-NGCC, JohnPTully Wheelhouse

Subject: : Crew Change to the Bartlett -

4

Hi

I am glad everything is going well on the Tully.

Yes, please join the Bartlett tomorrow. I spoke with the Chief Officer today and he said they are set up and expecting you. The Bartlett is not sailing until after the 27th but they will have time to teach you the work boat.

Please confirm receipt, and I have copied the Tully in case you are out of service.

Thank you,

s.19(1)

Ashleigh

From:

Sent: Thursday, July 12, 2018 6:55 AM

To: Harding, Ashleigh < Ashleigh. Harding@dfo-mpo.gc.ca>

Subject: Crew Change to the Bartlett

Hi Ashleigh,

Document Released Under the Access to Information Act / Document divulgué en vertus.19(1) de la Loi sur l'accès à l'information.

Cheers, Ashleigh
From: Sent: Monday, July 16, 2018 10:56 AM To: Harding, Ashleigh < Ashleigh. Harding@dfo-mpo.gc.ca > Subject: Crew Change to the Bartlett -
Good Morning Ashleigh,
Thank you for the confirmation. I'll be making my way to the Bartlett tomorrow. With the time alongside I'm sure I'll have time to stop by the office and say hello.
Thank you,
From: Harding, Ashleigh [Ashleigh.Harding@dfo-mpo.gc.ca] Sent: July 16, 2018 2:51 PM To: Cc: CCGS-NGCC, JohnPTully Wheelhouse Subject: Crew Change to the Bartlett -
Hi Fred,
I am glad everything is going well on the Tully.
Yes, please join the Bartlett tomorrow. I spoke with the Chief Officer today and he said they are set up and expecting you. The Bartlett is not sailing until after the 27 th but they will have time to teach you the work boat.
Please confirm receipt, and I have copied the Tully in case you are out of service.
Thank you, Ashleigh
From: Sent: Thursday, July 12, 2018 6:55 AM To: Harding, Ashleigh < Ashleigh. Harding@dfo-mpo.gc.ca > Subject: Crew Change to the Bartlett

Hi Ashleigh,

REGIONAL SAFETY BULLETIN

Hazardous Materials - Asbestos, Lead Paint

1. Issue

Increased awareness for both Fleet and Shore-Based employees as to the presence of asbestos containing materials (ACM) and lead paint in older CCG ships and structures as a result of recent findings on the CCGS Bartlett.

2. Target Audience

Canadian Coast Guard personnel, most notably those with potential exposure to hazardous materials, specifically asbestos and lead paint, in the course of their work.

3. Purpose of Bulletin

The purpose of this bulletin is to inform employees of the potential of these hazardous materials in many of our workplaces, identify the risks and mitigation measures, provide information, identify appropriate controls and to outline options for documentation of potential exposure.

4. Background

Asbestos and lead are present in our work environment, particularly in ships and buildings constructed prior to about 1990.

Asbestos refers to six naturally occurring fibrous minerals. Its desirable properties include that it greatly increases the tensile strength of materials, and is an excellent insulator against noise, heat and fire. These properties supported its use for many years in a number of different commercial and industrial settings, as well as in a wide range of consumer products. As long as asbestos is tightly bound within materials or encapsulated, it poses no significant health risk. If disturbed and reduced to a friable state such that it becomes airborne and is inhaled it may pose long-term health risks.

Lead in paint improves drying time, durability, appearance and moisture resistance. If ingested or inhaled lead can accumulate in the body and may cause a variety of ill health affects, with particular developmental risk to young children.

As awareness has grown over the associated health risks, the allowable limits (thresholds) of asbestos and lead in construction and consumer products has decreased substantially. The current approach is now very cautious and strict requirements for warning labels are in place. In some cases, ships

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Approved by:

Assistant Commissioner

Canadian Coast Guard - Western Region

previously surveyed as asbestos free, are now considered to have asbestos. Likewise, allowable levels of lead in paint have been decreasing over time and since 2010, any paint with greater than 0.009% lead must be labelled as such. Older paint coatings may very well contain lead levels above the current threshold.

The CCG continues to take significant efforts at asbestos management, including regular surveys of our ships and remediation or encapsulation of ACM where appropriate. In the recent case on the *CCGS Bartlett*, a comprehensive regime of sampling has been undertaken to provide a broader analysis of risk. This has included bulk material samples of wiring and other potential sources, dust wipe samples throughout suspect areas and air sampling throughout the ship at various times. Samples of suspect materials confirmed the presence of asbestos in certain specific wiring and in dusts in a variety of locations. It is probable, that in some cases at least, these dusts were residual from previous remediation efforts when cleaning standards were less rigorous than today. An asbestos remediation contractor is now conducting a thorough cleaning of suspect areas and finalizing a plan to encapsulate material in identified areas. Importantly, air monitoring on the ship in a variety of locations, times including prior the recent cleaning efforts, and operational states have all resulted in results either below the limit of detection or below the limit of quantitation for asbestos. Samples from the ventilation ducts also showed negative for asbestos.

Discussions with the Health Canada Occupational Health Medical Officer and environmental consultants are ongoing and these, in conjunction with the results of air monitoring, have provided CCG with confidence that the risk to personnel from asbestos in the current state should be considered to be very low. The greatest risk of asbestos related disease would be from work involving significant prolonged exposure to high concentrations of air-borne asbestos fibres and that is not indicated in our circumstances. That being said the CCG still maintains a cautious approach and will continue to work with specialists and will monitor, including air sampling, on an ongoing basis.

5. Workplace Controls

The presence of known or suspected hazards in the workplace require that risk assessments be completed and controls implemented to reduce risks to an acceptable level. Controls for both asbestos and lead share similar principles including;

- elimination (removal) or substitution of the hazard where prudent,
- engineering controls such as encapsulation,
- administrative controls such as management plans, training and familiarization, procedures and safe work instructions,
- appropriate use of personal protective equipment (PPE) where work is to be performed that may expose workers to hazardous materials.

For CCG ships with asbestos the Fleet Safety Manual 7.A.10, Handling and Containing Asbestos Materials provides guidance. Important principles include that these ships will have a designated Asbestos

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Page 2

Canadian Coast Guard - Western Region

Coordinator, typically the Chief Engineer, and that this position is responsible for monitor and updating the Vessel Specific Asbestos Management Plan (AMP). In addition, 7.A.10 outlines what must be in the AMP and provides a template. The CCG Shore-Based Safety Manual does not include a section on asbestos but the same principles will generally apply.

In addition to older CCG ships, asbestos is present in many of our older buildings, including office buildings, workshops and at remote sites. It has been confirmed present in the flange gasket materials and dark grey fibrous cement in fibreglass reinforced plastic (FRP) towers.

Specific controls for asbestos in the workplace include, in addition to the requirement for periodic surveys and removal / remediation where possible, that all employees and contractors are aware of the location, status and hazard of ACM in the workplace. Awareness is best provided as a part of familiarization to the workplace and by labelling, which identifies the presence of ACM in a space. If asbestos is disturbed in the CCG workplace, only CCG personnel trained and equipped to perform asbestos abatement shall conduct clean up and that to the level of type 2 (medium-risk). Type 3 (high-risk) work is only conducted by contractors.

Controls for lead paint in the workplace start with awareness of the possible presence of lead in paints, especially in older exterior or industrial coatings. Safe work instructions should be followed that focus on limiting the spread or inhalation of dust, during both the removal of paint from surfaces and the clean up of wastes.

The site specific Risk Register is to serve as a repository of risk related information and can aid in confirming that appropriate controls are in place. In all cases, work is not to be commenced until an operational risk assessment appropriate to the known or suspected hazards is conducted and it is confirmed that an appropriate level of control is in place.

While PPE is considered our last line of defence, its importance cannot be overstated when taking on work that may involve exposure to airborne hazards. The CCG Respiratory Protection Program (RPP) provides detailed guidance on measures to protect workers from airborne contaminants such as would be encountered during asbestos abatement work or the removal of paint (lead containing and otherwise) from surfaces.

6. Health and Exposure Documentation

Due the delayed nature of onset of potential ill health effects, many employees have questions regarding options for documentation of potential exposures. Whether an employee chooses to document in this manner is up to their discretion based upon their own understanding of exposure level and risk.

1. The WorkSafe BC Exposure Registry Program (<u>WorkSafeBC Exposure Registry Program</u>) is available to our employees. Once submitted via a simple online form, WorkSafe BC keeps this as a permanent record of the worker's exposure. When entering Employer Information on this

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Approved by:

Assistant Commissioner

Canadian Coast Guard – Western Region

- form, enter the following Department of Fisheries and Oceans, Safety & Health Services, #200 401 Burrard Street, Vancouver BC, V6C 3S4, (604) 666-4481.
- Health Canada Public Service Occupational Health Program maintains a file for each employee
 who receives medical assessments. Employees may submit a copy of their hazardous
 occurrence and incident report to Health Canada this then becomes part of the employee's
 medical record.
- 3. Health Canada also advises that individuals may also consult with their personal physician regarding their own particular exposure history and personal health risks.
- 4. Regarding any submitted IIRs, document retention guidelines require that reports of investigations (IIR) into hazardous materials exposure be kept for a minimum of 30 years.

7. References

- Canada Labour Code Part II, 124 Duties of Employers
- COHS Regulations Part X Hazardous Substances
- MOHS Regulations Part 20 Hazardous Substances
- <u>National Joint Council (NJC)</u> Occupational Health & Safety Directive, Part XI Hazardous
 Substances
- Fleet Safety Manual 7.A.10 Asbestos
- Health risks of asbestos Canada.ca
- Asbestos WorkSafeBC
- Lead Paint and Hazards | HealthLinkBC
- Lead WorkSafeBC
- WorkSafeBC Exposure Registry Program

Questions regarding the contents of this bulletin may be directed to:

Manager, Coast Guard Safety & Security, Western Region - 250-480-2636

Effective Date: June 21, 2018

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Approved by:

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CCGS-NGCC, Bartlett	Logistics Officer
	CCCC NCCC Bartlatt Chief Fraince
From: Sent:	CCGS-NGCC, Bartlett Chief Engineer July-24-18 10:41 AM
To:	'Jen Taptuna'; Jersch Russell; CCGS-NGCC, Bartlett Captain; Ayres Bob; Wright Edward;
10.	Granger Louise Anne
Cc:	Chaikin Gabriel; McMillan Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC,
	Bartlett Chief Officer; CCGS-NGCC, Bartlett Logistics Officer; Cole Ramshaw; CCGS-
	NGCC, Bartlett Engine Room;
Subject:	Rev.1 Bartlett Vent Cleaning plan.
Attachments:	CCGS Bartlett Ventilation Cleaning Plan .Rev.1(ACM Dust).2018.07.23.doc
	J
Attention all,	
Revision #1 contains N	North West Environmental's one requested/suggested change. See attachment
	Subject to approval will commence work soonest.
Respectfully,	
Scott Ware,	
Chief Engineer,	
CCGS Bartlett, Red	
Cell: or	
Cell:	
BartlettCE@bar.ccgs-r	ngcc.gc.ca
, <u></u>	for files above 5 MB
From:	
Sent: July-24-18 10:16 AM	1
	Chief Engineer; Jersch Russell; CCGS-NGCC, Bartlett Captain; Ayres Bob; Wright Edward;
Granger Louise Anne	
	an Cody; CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Chief Officer; CCGS-
	ficer; Cole Ramshaw; CCGS-NGCC, Bartlett Engine Room; d Bartlett Vent Cleaning plan.
Subject: RE. Long awaited	a bartiett vent Cleaning plan.
Good morning. I've review	ed and overall it looks good. One thing that should be added is the requirement to dispose of
	r suspects they might have gotten wet (once wet, they are no longer effective even after
drying).	, , , , , , , , , , , , , , , , , , , ,
Please let me know if you h	have any questions.
Best regards,	
North West Envronmental	Group Ltd.
Cell:	

From: CCGS-NGCC, Bartlett Chief Engineer [mailto:BartlettCE@ccgs-ngcc.gc.ca]

Sent: July 24, 2018 8:58 AM

201 – 415 Gorge Road East Victoria, BC V8T 2W1

Office: 250-384-9695 ext

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To: Jersch Russell < Russell.Jersch@dfo-mpo.gc.ca >;

; CCGS-NGCC, Bartlett Captain

<a href="mailto:searche-state-in-polygon-searche-state-in-polygon-searche-state-in-polygon-searche-state-in-polygon-searche-state-in-polygon-searche-state-in-polygon-searche-state-in-polygon-searche-state-in-polygon-search-state-in-polygon-search-state-in-polygon-search-state-in-polygon-search-state-in-polygon-search-state-in-polygon-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-search-se

Cc: Chaikin Gabriel < Gabriel.Chaikin@dfo-mpo.gc.ca >; McMillan Cody < cody.mcmillan@dfo-mpo.gc.ca >; CCGS-NGCC, Bartlett Senior Engineer < BartlettSE@ccgs-ngcc.gc.ca >; CCGS-NGCC, Bartlett Chief Officer < BartlettCHO@ccgs-ngcc.gc.ca >; CCGS-NGCC, Bartlett Logistics Officer < BartlettLO@ccgs-ngcc.gc.ca >; Cole Ramshaw < Cole.Ramshaw@ccgs-ngcc.gc.ca >; CCGS-NGCC, Bartlett Engine Room < BartlettER@ccgs-ngcc.gc.ca >
Subject: Long awaited Bartlett Vent Cleaning plan.

Good Morning All,

Please review attached plan. Questions/comments gratefully accepted. Once approved work can commence in earnest. (Signed copy submitted to Commanding Officer.

I will be in touch to schedule the inspection once approved. If I have misrepresented our discussion of last week please let me know soonest.

Thank you all for your time and patience.

Respectfully,

Scott Ware, Chief Engineer, CCGS Bartlett, Red Cell: or

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca
BartlettChief@gmail.com for files above 5 MB



Fisheries and Oceans Canadian Coast Guard Pêches et Océans Garde côtière canadienne

MEMORANDUM NOTE DE SERVICE



Russell Jersch, Marine Superintendent, Fleet Operations, Western Region, 25 Huron St, Victoria, BC.

From De

Scott Ware, Chief Engineer (Red), CCGS Bartlett

Security Classification - Classification de sécurité	
CONFIDENTIAL	
Our file - Notre référence	
BART 2018-07-23-001.Rev.1	
Your File - Votré référence	
Date	
July 23, 2018	

Subject Object

Bartlett Ventilation Cleaning Access Plan (July 2018):

This plan was developed in conjunction with Bartlett/ITS-MES/North West Environmental Services personnel, and submitted for approval, per senior management's request dated 16 July 2018. The plan was developed in the spirit and intent of current federal government policies and accepted industrial hygiene practices, used onboard during Asbestos Containing Materials (ACM) clean-up.

It has been long suspected that the cavities above the deckhead panels onboard Bartlett contained ACM dust. Test results accumulated from the Dec/Jan and May/July refits this year, by an independent 3rd party industrial hygienist, has confirmed this. It was so broadly present, it was recommended and accepted that no further testing need be conducted in these zones. The hygienist further stated the entire above deckhead panels space should be treated as an ACM area.

This has had a negative effect on routine annual ventilation and duct heater cleaning on Bartlett. This was further compounded by wipe sample testing from inside the ventilation trunking being positive for various levels and types of ACM dust. Therefore to provide necessary access through this cavity zone to clean the vent trunking requires an approved plan and subsequent verification of the actual process during the first execution of the plan by the industrial hygienist, for compliance. Adherence to the plan will contain any potential ACM dust from entering the earlier ACM cleaned crew cabins during the scheduled ventilation cleaning. The submitted procedure is:

Deckhead/HVAC Procedure

- 1. Set up a monolithic popup enclosure under reheat coil. Ensure no gaps around deckhead seal. Place under negative pressure.
- 2. Trace outline of the new access hole using a template (expected 9" x 20").
- 3. Drill four corner holes inside these lines, using a BitBuddy (or similar) connected to a certified HEPA vacuum, to contain dust/debris.
- 4. Cut out new access, using electric shears. Reduce vibration, using hand or suction cup on the deckhead panel, to minimize disturbing the dust in the overhead space.
- 5. Remove the sharp edges on opening in deckhead panel.
- 6. Clean the deckhead cavity thru the new access, using an HEPA vacuum on all reachable surfaces, including the HVAC system trunking.
- 7. Wet wipe vacuumed surfaces, where possible, carefully remove loose insulation, if needed.



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- 8. Install a temporary deckhead seal using 6-mil poly and tape. If the vessel were to go to sea at this point, ensure the tape used will not delaminate under at-sea conditions (e.g. increased humidity, temperature changes, etc.). Note: if going to sea prior to cleaning the HVAC, reclean the deckhead space by HEPA vacuuming and wet wiping, before accessing/cleaning the vent trunking. (This step is a worse-case scenario. Going to sea without a running accommodation ventilation system is not recommended.)
- 9. When ready to work on HVAC, install a temporary enclosure using zip poles and 6-mil poly. Place under negative pressure.
- 10. Clean the reheat coil. Install bladders and commence with HVAC cleaning. Ducts will be under negative pressure for the cleaning process and the HVAC cleaner must have training/experience working with asbestos and have the appropriate controls in place (e.g. vacuum truck is certified HEPA filtered etc).
- 11. Leave temporary enclosure in place.
- 12. Before removing enclosure at step 11, install new permanent access cover/hatch (which will be cut and prepared ashore). New permanent cover to be sealed with the same silicone firestop caulking currently being used on the deckhead paneling joints, around the ship.
- 13. Once cover installed, clean inside enclosure to prevent any dust release, follow personal decontamination. Upon exiting, while still wearing mask, disassemble temporary enclosure, placing in double bag per ACM debris material disposal.

The above work will be done moderate risk with additional controls. Additional controls include the use of negative pressure and enclosure. Moderate risk requires the use of a half-face respirator with P100 filters, disposable coveralls, and decontamination area (see below for details). Additional PPE as required. (Please note if respiratory cartridges get wet or are suspected of being wet they must be changed. Even dried out they will no longer work.)

NWest will review the first set of deckhead panel cutting work to ensure controls are adequate. NWest will also conduct air sampling (occupational/breathing zone and ambient) on at least the first set of work.

Decontamination area: (Location where you'll have your wash bucket with clean, soapy water.)

- 1. Inside enclosure, HEPA vacuum and/or damp wipe disposable coveralls (after cleaning the inside of the enclosure).
- 2. Removal coveralls and place in waste bag.
- 3. Step out, wearing respirator.
- 4. Wash hands. Carefully damp wipe outside of respirator then remove. Baby wipes can be used instead of a soapy water wash bucket. If water is used, it must be disposed of as asbestos contaminated.

Submitted for your consideration and approval.

Scott Ware, Chief Engineer (Red) CCGS Bartlett

Cc'd: ITS-MES, Fleet Ops, Fleet Safety, Ship's Command



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CCGS-NGCC, Bartlett Captain

From:

CCGS-NGCC, Bartlett Chief Engineer

Sent:

July-28-18 7:33 PM

To:

CCGS-NGCC, Bartlett Senior Engineer; CCGS-NGCC, Bartlett Captain; CCGS-NGCC,

Bartlett Chief Officer

Cc:

McMillan Cody; Chaikin Gabriel

Subject:

FW: Bartlett wire sample result

Attachments:

35992 AB1 V1.0 2018-07-28 CCGS Bartlett S1 to 3.pdf; Ch.Off. Hd.Vent.Htr.Wire (1).jpg;

Ch.Off. Hd.Vent.Htr.Wire (2).jpg

Good Evening Gentlemen,

Good News! Dodged a significant bullet today. Sample negative for asbestos, on ventilation ducting individual heating coil wire found yesterday and tested today. See email chain below for context and NWest comments, test results attached. The wire had a black woven jacket over a black sheath with a large white core (pics attached, looked just like the stuff on the bridge except for the weave). Subject to further suspicious findings we are good to go. Deckhead panel cutting approved and witnessed. No ACM materials outside of the enclosure and none on the worker inside. All controls working properly. Superior Steam Clean scheduled for Tuesday, panel access cutting continues in the morning.

On an additional positive note, both main engines ran for more than an hour today and all six rafts just arrived from Dartmouth, 60 minutes ago. More tomorrow.

Respectfully,

Scott Ware,
Chief Engineer,
CCGS Bartlett, Red
Cell:
or
Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: July-28-18 6:49 PM

To: CCGS-NGCC, Bartlett Chief Engineer

Cc: Grant Rogers

Subject: RE: Bartlett wire sample result

No disagreement at this time.

Thanks very much,



Project Manager
North West Environmental Group Ltd.

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From: CCGS-NGCC, Bartlett Chief Engineer < <u>BartlettCE@ccgs-ngcc.gc.ca</u>> **Sent:** July 28, 2018 5:31 PM

To: Cc:

Subject: RE: Bartlett wire sample result

Good Afternoon

Thank you! That is the best possible result. These heaters are simple two wire units utilizing the same wire at both ends. All made by the same manufacturer (the heater units that is). So unless we find different wiring and subject to review by my management or disagreement with you based on this reply, we are going to proceed as approved with the plan witnessed on Friday past. Thanks again and for your positively a stellar effort on our behalf.

Please charge to Master Card #:

CCGS Bartlett, CE, Govt of/Gouv du Canada

We are PST exempt,

Thank you.

Respectfully,

Scott Ware, Chief Engineer, CCGS Bartlett, Red Cell: or

Cell:

BartlettCE@bar.ccgs-ngcc.gc.ca

BartlettChief@gmail.com for files above 5 MB

From:

Sent: July-28-18 4:16 PM

To: CCGS-NGCC, Bartlett Chief Engineer

CC:

Subject: Bartlett wire sample result

Good afternoon, please find attached the analytical report for the sample of cabling you collected from a heater. Since this is not a homogeneous material, we analysed three subsamples. Note: other wiring should be treated as asbestos containing, if present, until it can be analysed.

Best,

Project Manager

North West Environmental Group Ltd.



#201 – 415 Gorge Road East Victoria, B.C. V8T 2W1

C:

O: (250) 384-9695 ext.

The information contained in this email message is privileged and confidential information intended only for the use of the party named above. If you have received this communication in error, please notify the author and delete the message from your system. Your cooperation is appreciated.

N.N. North West Z. Environmental Group Ltd.

Bulk Sample Report

1 - 1611 Bowen Road Nanaimo, BC V9S 1G5 Tel: (250) 591-9695 Fax: (250) 384-9865 e-mail: northwest@nwest.bc.ca

Asbestos Analysis of Bulk Materials using Polarized Light Microscopy

Client: Canadian Coast Guard - Victoria

Contractor: Canadian Coast Guard - Victoria

Project: CCGS Bartlett - Cable Samples

Date: July 28, 2018

Client Job or PO#: . Project number: 35992

Sample No	Location	Date Analysed	Analyst	Description	Phase	%	Asbestos	%	Other Materials	%	Comments
35992-1b	Washplace Heater	Jul-28-2018	æ	Cable	Silver 1	100	100 None Detected	o	Glass (50%) Non-Fibrous (50%)	100	
35992-2b	Washplace Heater	Jul-28-2018	æ	Cable	Silver 1	100	100 None Detected	٥	Glass (50%) Non-Fibrous (50%)	100	
35992-3b	Washplace Heater	Jul-28-2018	98	Cable	Silver 1	100	100 None Detected	0	Glass (50%) Non-Fibrous (50%)	100	

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